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FPC58-0403-01

DECLARATION OF CONFORMITY

according to FCC Part 15

Responsible Party Name:	Fujitsu PC Corporation
Address:	5200 Patrick Henry Drive Santa Clara, CA 95054
Telephone:	(408) 982-9500
Declares that product:	Model Configurations: LifeBook A-4170 Complies with Part 15 of the FCC Rules.

This device complies with Part 15 of the FCC rules. Operations are subject to the following two conditions: (1) This device must not be allowed to cause harmful interference, (2) This device must accept any interference received, including interference that may cause undesired operation.

CAUTION

Changes or modification not expressly approved by Fujitsu PC Corporation could void this user's authority to operate the equipment.

FCC NOTICES

Notice to Users of Radios and Television

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet that is on a different circuit than the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device.

Notice to Users of the US Telephone Network

Your LifeBook may be supplied with an internal modem which complies with Part 68 of the FCC rules. On this notebook is a label that contains the FCC Registration Number and the Ringer Equivalence Number (REN) for this equipment among other information. If requested, the user must provide their telephone company with the following information:

1. The telephone number to which the notebook is connected.
2. The Ringer Equivalence Number (REN) for this equipment.
3. That the equipment requires a standard modular jack type USOC RJ-11C which is FCC Part 68 compliant.
4. The FCC Registration Number.

This equipment is designed to be connected to the telephone network or premises wiring using a standard modular jack type USOC RJ-11C which is FCC Part 68 compliant and a line cord between the modem and the telephone network with a minimum of 26AWG.

The REN is used to determine the number of devices that you may connect to your telephone line and still have all of those devices ring when your number is called. Too many devices on one line may result in failure to ring in response to an incoming call. In most, but not all, areas the sum of the RENs of all of the devices should not exceed five (5). To be certain of the number of devices you may connect to your line, as determined by the RENs, contact your local telephone company.

If this equipment causes harm to the telephone network, your telephone company may discontinue your service temporarily. If possible, they will notify you in advance. If advance notice is not practical they will notify you as soon as possible. You will also be advised of your right to file a complaint with the FCC.

This fax modem also complies with fax branding requirements per FCC Part 68.

Your telephone company will probably ask you to disconnect this equipment from the telephone network until the problem is corrected and you are sure that the equipment is not malfunctioning. This equipment may not be used on coin-operated telephones provided by your telephone company. Connection to party lines is subject to state tariffs. Contact your state's public utility commission, public service commission or corporation commission for more information.

This equipment includes automatic dialing capability. When programming and/or making test calls to emergency numbers:

- Remain on the line and briefly explain to the dispatcher the reason for the call.
- Perform such activities in off-peak hours, such as early morning or late evening.

FCC rules prohibit the use of non-hearing aid compatible telephones in the following locations or applications:

- All public or semipublic coin-operated or credit card telephones.
- Elevators, highways, tunnels (automobile, subway, railroad or pedestrian) where a person with impaired hearing might be isolated in an emergency.
- Places where telephones are specifically installed to alert emergency authorities such as fire, police or medical assistance personnel.
- Hospital rooms, residential health care facilities, convalescent homes and prisons.
- Workstations for the hearing impaired.
- Hotel, motel or apartment lobbies.
- Stores where telephones are used by patrons to order merchandise.
- Public transportation terminals where telephones are used to call taxis or to reserve lodging or rental cars.

- In hotel and motel rooms as at least ten percent of the rooms must contain hearing aid compatible telephones or jacks for plug-in hearing aid compatible telephones which will be provided to hearing impaired customers on request.

DOC (INDUSTRY CANADA) NOTICES

Notice to Users of Radios and Television

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

CET appareil numérique de la class B respecte toutes les exigence du Réglement sur le matérial brouilleur du Canada.

Notice to Users of the Canadian Telephone Network

The Canadian Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

LifeBook computers are supplied with an internal modem which complies with the Industry Canada certification standards for telecommunication network protection and safety requirements. Before connecting this equipment to a telephone line the user should ensure that it is permissible to connect this equipment to the local telecommunication facilities.
The user should be aware that compliance with the certification standards does not prevent service degradation in some situations.

Repairs to telecommunication equipment should be made by a Canadian authorized maintenance facility. Any repairs or alterations not expressly approved by Fujitsu™ PC Corporation or any equipment failures may give the telecommunication company cause to request the user to disconnect the equipment from the telephone line.

The connecting arrangement code for this equipment is CA11A.

The Load Number is 0.2.

The Load Number assigned to each telephone terminal device denotes the percentage of the total load to be connected to a telephone loop or circuit which is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices such that the total of the load numbers of all devices does not exceed 100.

CAUTION

For safety, users should ensure that the electrical ground of the power utility, the telephone lines and the metallic water pipes are connected together. Users should NOT attempt to make such connections themselves but should contact the appropriate electric inspection authority or electrician. This may be particularly important in rural areas.

Avis Aux Utilisateurs Du Réseau Téléphonique Canadien

L'étiquette canadienne Industrie Canada identifie l'équipement certifié. Cette certification signifie que l'équipement satisfait certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le département ne garantit pas le fonctionnement de l'équipement à la satisfaction de l'utilisateur.

La série LifeBookTM E possède un modem interne conforme aux normes de certification d'Industrie Canada pour protéger les réseaux de télécommunications et satisfaire aux normes de sécurité. Avant de connecter cet équipement à une ligne téléphonique, l'utilisateur doit vérifier s'il est permis de connecter cet équipement aux installations de télécommunications locales. L'utilisateur est averti que même la conformité aux normes de certification ne peut dans certains cas empêcher la dégradation du service.

Les réparations de l'équipement de télécommunications doivent être eVectuées par un service de maintenance agréé au Canada. Toute réparation ou modification, qui n'est pas expressément approuvée par Fujitsu PC Corp., ou toute défaillance de l'équipement peut entraîner la compagnie de télécommunications à exiger que l'utilisateur déconnecte l'équipement de la ligne téléphonique.

Le code d'arrangement de connexion de cet équipement est CA11A.

Le numéro de charge est 0.2.

Le numéro de charge assigné à chaque terminal téléphonique indique le pourcentage de la charge totale pouvant être connecté à une boucle ou à un circuit téléphonique, utilisé par ce périphérique afn de prévenir toute surcharge. La terminaison d'une boucle peut être constituée de n'importe quelle combinaison de périphériques de sorte que le total de numéros de charge de tous les périphériques n'excède pas 100.

AVERTISSEMENT

Pour assurer la sécurité, les utilisateurs doivent véri?er que la prise de terre du service d'électricité, les lignes télphoniques et les conduites d'eau métalliques sont connectées ensemble. Les utilisateurs NE doivent PAS tenter d'établir ces connexions eux-mêmes, mais doivent contacter les services d'inspection d'installations électriques appropriés ou un électricien. Ceci peut être particulièrement important en régions rurales.

UL Notice

This unit requires an AC adapter to operate. Use only UL Listed Class 2 adapter, output rating 16V DC, 3.36 A. Refer to the illustration below for the correct AC Adapter out polarity:



The modem-to-telephone network connection must be a line cord using a minimum of 26AWG.

For Authorized Repair Technicians Only

CAUTION

For continued protection against risk of fire, replace only with the same type and rating fuse.

WARNING

Danger of explosion if Lithium (CMOS) battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instruction.

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1 Preface

Preface

ABOUT THIS GUIDE

The A Series LifeBook™ from Fujitsu PC Corporation is a powerful notebook computer. It is powered by an Intel® Celeron™ microprocessor, has a built-in color display, and brings the computing power of desktop personal computers (PCs) to a portable environment.

This manual explains how to operate your LifeBook's hardware and built-in system software. Your notebook is compatible with the IBM® PC AT.

It comes with Microsoft® Windows® 98 Second Edition or Windows 2000 Professional pre-installed.

The LifeBook is a completely self-contained unit with an active-matrix SVGA TFT color LCD display. It has a powerful interface that enables it to support a variety of optional features.

Conventions Used in the Guide

Keyboard keys appear in brackets.
Example: [Fn], [F1], [ESC], [ENTER] and [CTRL].

Pages with additional information about a specific topic are cross-referenced within the text.
Example: *(See page xx.)*

On screen buttons or menu items appear in bold
Example: Click **OK** to restart your LifeBook.

DOS commands you enter appear in Courier type.
Example: `Shutdown the computer?`

POINT

The point icon highlights information that will enhance your understanding of the subject material.

CAUTION

The caution icon highlights information that is important to the safe operation of your computer, or to the integrity of your files. Please read all caution information carefully.

WARNING

The warning icon highlights information that can be hazardous to either you, your LifeBook, or your files. Please read all warning information carefully.

FUJITSU PC CONTACT INFORMATION

Service and Support

You can contact Fujitsu Service and Support the following ways:

- Toll free: 1-800-8FUJITSU (1-800-838-5487)
- Fax: 1-901-259-5700
- E-mail: 8fujitsu@fpc.fujitsu.com
- Web site: http://www.8fujitsu.com

Before you place the call, you should have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- Product name
- Product configuration number
- Product serial number
- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Hardware configuration
- Type of device connected, if any

Fujitsu On-line

You can go directly to the on-line Fujitsu Product catalog for your LifeBook by clicking on the LifeBook Accessories Web site URL link, located in the Windows Start menu.

You can also reach Fujitsu Service and Support on-line by clicking on the Fujitsu Service and Support Web site URL link, located in the Service and Support Software folder of the Windows Start menu.

POINT

You must have an active internet connection to use the on-line URL links.

WARRANTY

Your LifeBook is backed by a one year International Limited Warranty and includes toll-free technical support. Check the service kit that came with your LifeBook for warranty terms and conditions.

2 Getting to Know Your LifeBook

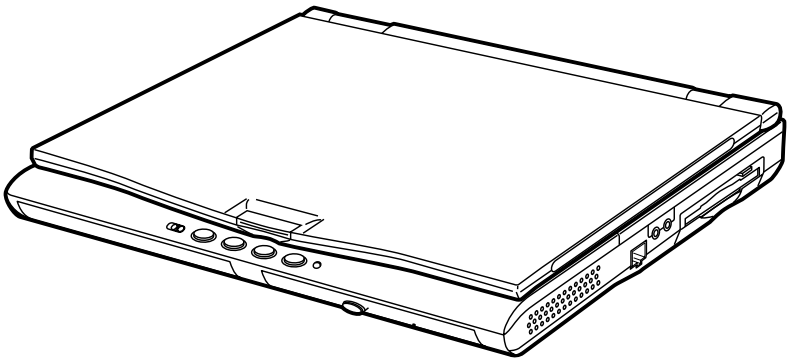


Figure 2-1 A Series LifeBook

Overview

This section describes the components of your Fujitsu LifeBook. We strongly recommend that you read it before using your LifeBook – even if you are already familiar with notebook computers.

UNPACKING

When you receive your LifeBook, unpack it carefully, and compare the parts you have received with the items listed below.

For a pre-configured model you should have:

- A Series LifeBook *(Figure 2-1)*
- Lithium ion battery, pre-installed
- AC adapter with AC power cord *(Figure 2-2)*
- Phone/Modem (RJ-11) telephone cable
- Emergency Recovery CD
- Drivers and Applications Restore CD
- Getting Started Guide
- User's Guide (this guide)
- Product Registration card
- International Limited Warranty Brochure
- Getting Started Manual for Microsoft Windows 98 Second Edition or Windows 2000 Professional
- First Cabin Registration card and envelope

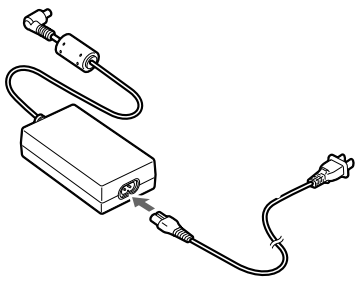


Figure 2-2 AC Adapter

Once you have checked and confirmed that your LifeBook system is complete, read through the following pages to learn about all of your LifeBook's components.

LIFEBOOK FEATURES

The Fujitsu LifeBook is a compact, yet powerful notebook computer available with a variety of features, including: *(See Specifications on page 75 for more information)*

- Intel Celeron processor
- 100MHz SDRAM system memory
- Clear, bright SVGA TFT display
- Lithium ion battery
- Built-in 6 GB hard drive
- ATI Mobility-M video, 4MB of video RAM
- External monitor support with simultaneous display capabilities
- Dual monitor support
- LifeBook Application Panel
- Internal 56K* fax/data/voice modem with V.90 support
- Full audio and video features:
  - Zoomed Video support for full motion video acceleration
  - Built-in stereo speakers
  - Built-in mono microphone
  - Stereo line-in jack
  - Stereo headphone jack
  - Microphone jack
- Combination PC card slot accommodates 2 Type II or 1 Type III cards
- Fast IrDA (4Mbps) compatible infrared port for wireless data transfer

** Actual data transfer rate over U.S. telephone lines varies and is less than 56Kbps due to the current FCC regulations and line conditions. The internal modem on all LifeBooks from Fujitsu PC Corporation is only qualified for use with telephone systems inside the United States and Canada and may not operate in other countries.*

- TouchPad for superb cursor control and comfort
- Full-size 87-key keyboard with three dedicated Windows keys
- Hot-swappable PS/2 port for external components
- USB device support
- DMI 2.0-ready and WfM 1.1a-compatible

LIFEBOOK SOFTWARE

For Microsoft Windows 98 Second Edition Pre-Installed Models

- Microsoft Windows 98 Second Edition Operating System
- Microsoft Internet Explorer
- LapLink® 2000
- PMSet 98
- McAfee.com® ActiveShield™
- McAfee.com Clinic (on-line coupon)
- PC-Doctor® for Windows
- Adobe Acrobat Reader®
- Netscape Communicator®
- LifeBook Application Panel
- Internet Service Providers:
  - AOL®
  - CompuServe™
  - Earthlink®

For Microsoft Windows 2000 Professional Pre-Installed Models

- Microsoft Windows 2000 Professional Operating System
- PC-Doctor for Windows
- McAfee.com ActiveShield
- McAfee.com Clinic (on-line coupon)
- Microsoft Internet Explorer
- Netscape Communicator
- Adobe Acrobat Reader
- Lifebook Application Panel

POINT

Some software may come separately on a CD and will have to be installed.

POPULAR ACCESSORIES

For ordering or additional information on Fujitsu accessories, please visit our Web site at www.fujitsupc.com or call 1-877-FPCDirect.

Memory Upgrades

100MHz Bus speed system:

- 32MB SDRAM
- 64MB SDRAM
- 128MB SDRAM

Docking

- Port Replicator II
- Monitor Stand

Expansions

- Universal LAN hub

Power

- Lithium ion battery
- Auto/Airline Adapter (call for availability)
- AC Adapter

Additional Accessories

- Numeric Keypad
- USB Digital Camera (external)
- Presentation Audio System
- MindPath PocketPoint
- TeleAdapt 16' TeleCord
- Notebook Guardian Lock
- IBM Modem Saver

Carrying Cases

- Diplomat
- Diplomat with Airpro
- Folio
- ProPack Backpack
- Executive Plus

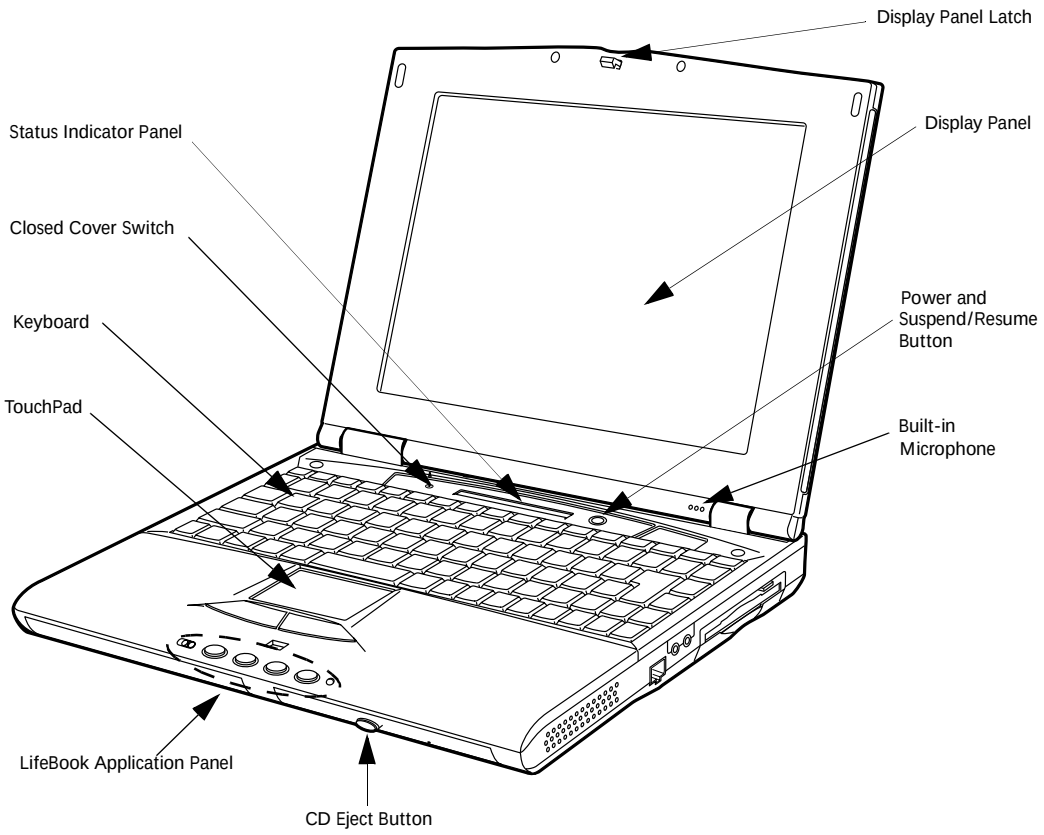


Figure 2-3 LifeBook with display open

Locating the Controls and Connectors

TOP AND FRONT COMPONENTS

The following is a brief description of your LifeBook's top and front components.

Display Panel Latch

The display panel latch locks and releases the display panel.

Display Panel

The display panel is a color LCD panel with back lighting for the display of text and graphics.

Built-in Microphone

The built-in microphone allows mono audio input.

CD Eject Button

The CD Eject button allows you to open the CD-ROM tray to insert or remove a CD-ROM.

Status Indicator Panel

The Status Indicator Panel displays symbols that correspond with a specific component of your LifeBook. *(See Status Indicator Panel on page 15 for more information)*

Power and Suspend/Resume Button

The Power and Suspend/Resume button is always used to Power On your LifeBook from its Off state. It is also used as the Suspend/Resume button. This allows you to suspend LifeBook activity without powering off, resume your LifeBook from suspend mode, and power on your LifeBook when it has been shut down. *(See Power ON on page 31 for more information)* and *(See Power and Suspend/Resume Button on page 34 for more information)*

Closed Cover Switch

The closed cover switch turns off the LCD backlighting when the display panel is closed.

Keyboard

A full-size keyboard with dedicated Windows keys. *(See Figure 2-3 on page 9 for location) (See Using the Keyboard on page 17 for more information)*

TouchPad

The TouchPad is a mouse-like cursor control with two buttons. *(See Figure 2-3 on page 9 for location) (See TouchPad Pointing Device on page 19 for more information)*

LifeBook Application Panel

The LifeBook Application Panel provides one-touch application launch capability. *(See Figure 2-3 on page 9 for location) (See LifeBook Application Panel on page 39 for more information)*

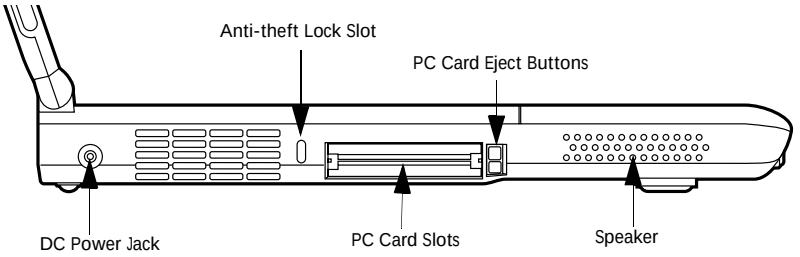


Figure 2-4 LifeBook left-side panel

LEFT-SIDE PANEL COMPONENTS

Following is a brief description of your LifeBook's left-side components.

DC Power Jack

The DC power jack allows you to plug in the AC adapter to power your LifeBook and charge the internal Lithium ion battery.

PC Card Slots

The PC Card Slots allow you to install two Type II PC Cards or one Type III PC Card.
(See PC Cards on page 45 for more information)

Anti-theft Lock Slot

The anti-theft lock slot allows you to attach an optional physical lock down device.

Stereo Speakers

The built-in dual speakers allow for stereo sound.

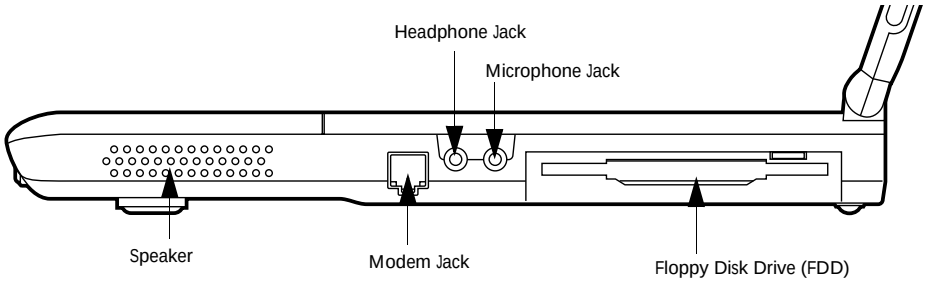


Figure 2-5 LifeBook right-side panel

RIGHT-SIDE PANEL COMPONENTS

Following is a brief description of your LifeBook's right-side components.

Modem (RJ-11) Jack

The Modem (RJ-11) telephone jack is used for attaching a telephone line to the internal 56K modem.*(See Modem (RJ-11) Telephone Jack on page 49 for more information)*

CAUTION

The internal modem is designed to the ITU-T V.90 standard. Its maximum speed of 53000bps is the highest allowed by FCC, and its actual connection rate depends on the line conditions. The maximum speed is 33600bps at upload.

CAUTION

The internal modem is not intended for use with Digital PBX systems. Do not connect the internal modem to a digital PBX as it may cause serious damage to the internal modem or your entire LifeBook. Consult your PBX manufacturer's documentation for details. Some hotels have Digital PBX systems. Be sure to find out BEFORE you connect your modem.

CAUTION

The internal modem on all LifeBooks from Fujitsu PC Corporation are certified for use in the United States and Canada only.

Microphone Jack

The microphone jack allows you to connect an external mono microphone. *(See Microphone Jack on page 50 for more information)*

Headphone Jack

The headphone jack allows you to connect headphones or powered external speakers. *(See Headphone Jack on page 50 for more information)*

Floppy Disk Drive

The floppy disk drive allows you to read and write information on removable 1.44MB and 720KB floppy disks. *(See Floppy Disk Drive on page 41 for more information)*

Stereo Speakers

The built-in dual speakers allow for stereo sound.

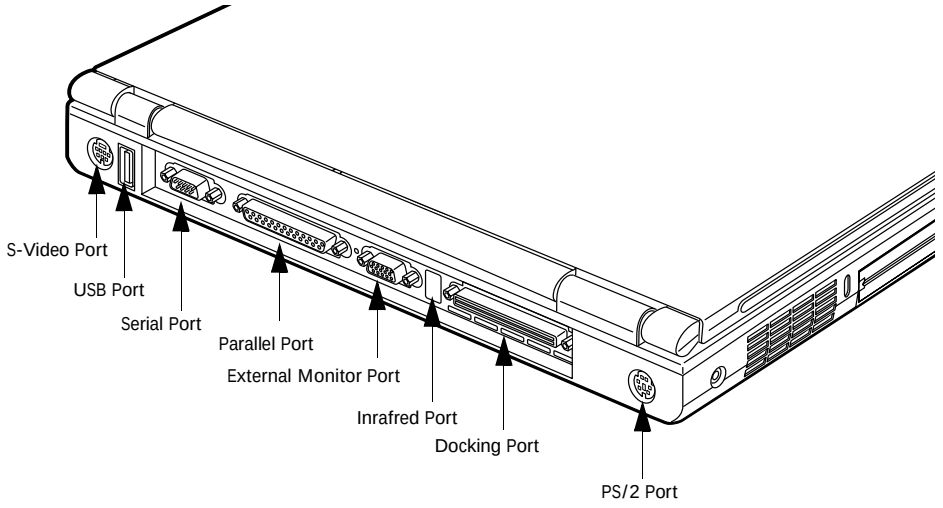


Figure 2-6 LifeBook back panel

BACK PANEL COMPONENTS

Following is a brief description of your LifeBook's rear panel components.

PS/2 Port

The PS/2 port allows you to connect an external PS/2 keyboard, mouse or numeric keypad. *(See PS/2 Port on page 49 for more information)*

Serial Port

The serial port allows you to connect serial (RS-232C) devices. (This is also sometimes referred to as a COMM port.) *(See Serial Port on page 49 for more information)*

Parallel Port

The parallel port allows you to connect parallel devices. (This is also sometimes referred to as an LPT port.) *(See Parallel Port on page 49 for more information)*

External Monitor Port

The external monitor port allows you to connect an external monitor. *(See External Monitor Port on page 50 for more information)*

USB Port

The USB port allows you to connect Universal Serial Bus devices. *(See Universal Serial Bus Port on page 49 for more information)*

Docking Port

The docking port allows you to connect an optional port replicator or docking station. *(See Docking Port on page 50 for more information)*

Infrared Port

TheIrDA compatible port allows you to communicate with another IrDA compatible infrared device without a cable.

S-Video Port

The S-Viedo output is used to transmit the S-Video signal to your television or VCR. *(See S-Video Port on page 50 for more information)*

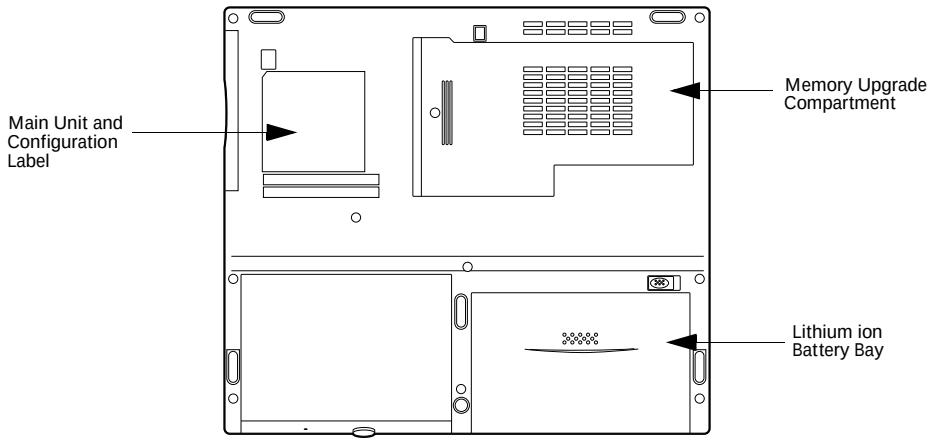


Figure 2-7 LifeBook bottom panel

BOTTOM COMPONENTS

Following is a brief description of your LifeBook's bottom panel components.

Main Unit and Configuration Label

The configuration label shows the model number and other information about your LifeBook. In addition, the configuration portion of the label has the serial number, Microsoft Windows Certificate of Authenticity, and manufacturer information that you will need to give your support representative. It identifies the exact version of various components of your LifeBook.

Memory Upgrade Compartment

Your LifeBook comes with high speed Synchronous Dynamic RAM (SDRAM). The memory upgrade compartment allows you to expand the system memory capacity of your LifeBook, hence improving overall performance. *(See Memory Upgrade Module on page 47 for more information)*

Lithium ion Battery Bay

The battery bay contains the internal Lithium ion battery. It can be opened for the removal of the battery when stored over a long period of time or for swapping a discharged battery with a charged Lithium ion battery. *(See Lithium ion Battery on page 39 for more information)*

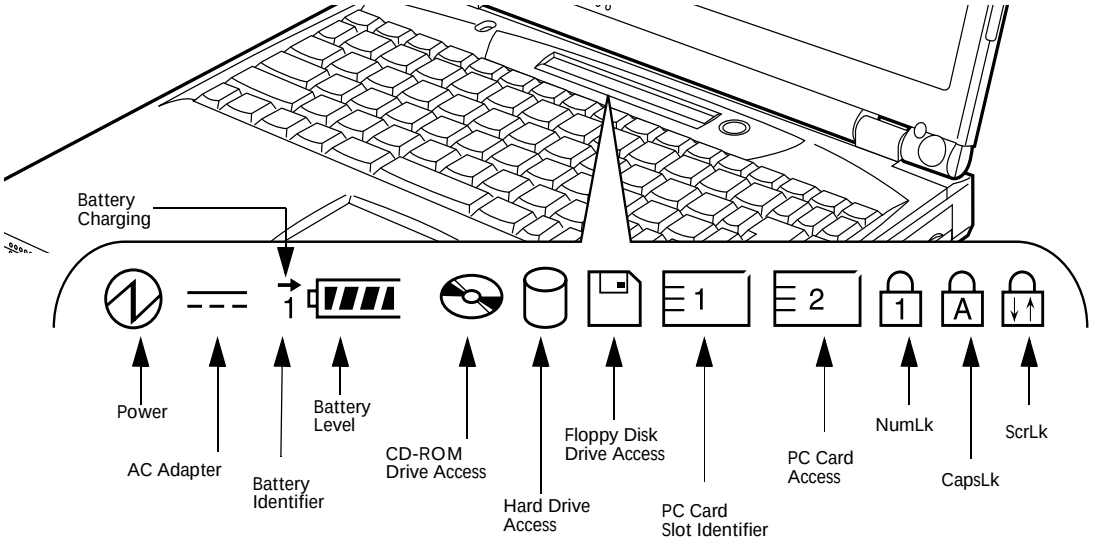


Figure 2-8 Status Indicator Panel

Status Indicator Panel

The Status Indicator panel is located in the recess just above your keyboard. Within this panel are symbols that correspond with a specific component of your LifeBook. These symbols tell you how each of those components are operating. *(Figure 2-8)*

POWER INDICATOR

The Power indicator symbol states whether your system is operational. It has several different states, each of which tells you what mode your LifeBook is in at that time.

- Steady On: This means that there is power to your LifeBook and that it is ready for use.
- Flashing: This means that your LifeBook is in Suspend mode.
- Steady Off: This means that your system is either in Save-to-Disk mode, or that your LifeBook has been turned off with the power switch.

If you are charging your battery, the Power indicator symbol will remain on even if your LifeBook is shut off. The Power indicator symbol will also remain on if you have either adapter connected and are shut down from Windows, but have not turned off the power switch.

AC ADAPTER INDICATOR

The AC Adapter indicator states whether your LifeBook is operating from the AC adapter or the batteries. This icon has two different states that can tell you what power source your LifeBook is using.

- On: This means that either of the adapters are currently in use.
- Off: Power is only coming from the batteries, and you do not have an adapter connected.

BATTERY LEVEL INDICATORS

The Battery Level indicator states whether or not the Lithium ion battery is installed. The symbol will only be displayed if a battery is currently installed in your LifeBook. *(Figure 2-9)*

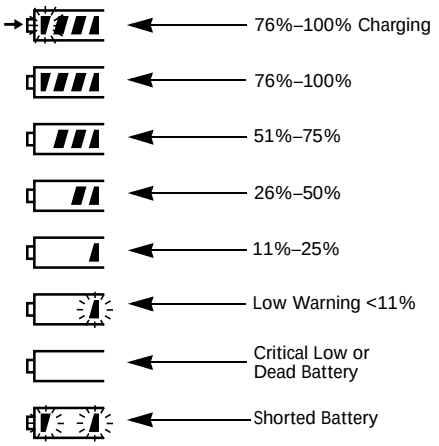


Figure 2-9 Battery Level Indicator

CAUTION

A shorted battery is damaged and must be replaced immediately. *(Figure 2-9)*

POINT

If there is no battery activity, the power adapters are not connected, and the power switch is Off, the Battery Level indicators will also be off.

→ BATTERY CHARGING INDICATORS

Located to the left of each of the Battery Level indicators is a small arrow symbol. This symbol states whether that specific battery is charging. This indicator operates whether the power switch is in the On or Off position, and will flash if the battery is too hot or cold to charge.

CAUTION

Batteries subjected to shocks, vibration or extreme temperatures can be permanently damaged.

CD-ROM DRIVE ACCESS INDICATOR

The CD-ROM Access indicator tells you that the CD-ROM drive is being accessed. If the Auto Insert function is active, the indicator will flash periodically when your system is checking the CD-ROM drive. If the Auto Insert Notification function is not active, the indicator will only flash when you access the CD-ROM drive. The default setting is the Auto Insert Notification function active. *(See Auto Insert Notification Function on page 43 for more information)*

POINT

The Windows 98 Second Edition Auto Insert Notification function will periodically check for a CD installed in the drive, causing the CD-ROM Access indicator to flash. The CD Auto Insert Notification function allows your system to automatically start a CD as soon as it is inserted in the drive and the tray is closed. It will begin playing an audio CD or will start an application if the CD has an auto-run file. *(See Auto Insert Notification Function on page 43 for more information)*

HARD DRIVE ACCESS INDICATOR

The Hard Drive Access indicator states whether your internal hard drive is being accessed.

FLOPPY DISK DRIVE ACCESS INDICATOR

The Floppy Disk Drive Access indicator states whether the floppy disk drive is being accessed.
This indicator will flash if your software tries to access a disk even if no floppy disk drive is installed. *(See Floppy Disk Drive on page 41 for more information)*

PC CARD ACCESS INDICATORS

The PC Card Access indicator(s) state whether or not your LifeBook is accessing a PC Card(s). The indicator will flash if your software tries to access a PC Card even if there is no card installed. The number inside the indicator refers to which PC Card slot is being accessed. *(See PC Cards on page 45 for more information)*

NUMLK INDICATOR

The NumLk indicator states that the internal keyboard is set in ten-key numeric keypad mode. *(See Using the Keyboard on page 17 for more information)*

POINT

If you are using the optional external numerical keypad, pressing the [NumLk] key will activate the external keypad. The indicator will come on, however it will not change any of the functionality of your keyboard keys.

CAPSLOCK INDICATOR

The CapsLock indicator states that your keyboard is set to type in all capital letters. *(See Using the Keyboard on page 17 for more information)*

SCRLK INDICATOR

The ScrLk indicator states that your scroll lock is active. *(See Using the Keyboard on page 17 for more information)*

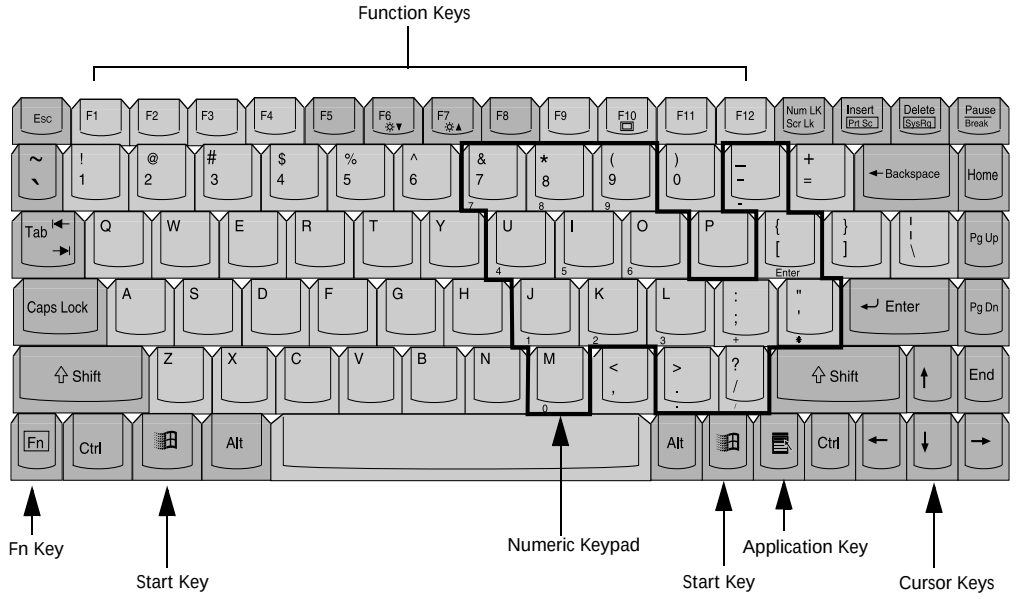


Figure 2-10 Keyboard

Keyboard

USING THE KEYBOARD

Your Fujitsu LifeBook has an integral 87-key keyboard. The keys perform all the standard functions of a 101-key keyboard, including the Windows keys and other special function keys. This section describes the following keys. *(Figure 2-10)*

- Numeric keypad: Your LifeBook allows certain keys to serve dual purposes, both as standard characters and as numeric and mathematical keys. The ability to toggle between the standard character and numerical keys is controlled through the [NumLk] key.
- Cursor keys: Your keyboard contains four arrow keys for moving the cursor or insertion point to the right, left, up, or down within windows, applications and documents.
- Windows keys: These keys work with your Windows operating system and function the same as the onscreen Start menu button, or the right button on your pointing device.
- Function keys: The keys labeled [F1] through [F12] are used in conjunction with the [Fn] key to produce special actions that vary depending on what program is running.

NUMERIC KEYPAD

Certain keys on the keyboard perform dual functions as both standard character keys and numeric keypad keys. NumLk can be activated by pressing the [NumLk] keys. Turning off the NumLk feature is done the same way.

Once this feature is activated you can enter numerals 0 through 9, perform addition (+), subtraction (-), multiplication (*), or division (/), and enter decimal points (.) using the keys designated as ten-key function keys. The keys in the numeric keypad are marked on the front edge of the key to indicate their secondary functions.

POINT

If you are using the optional external numerical keypad, pressing the [NumLk] key will activate the external keypad. The indicator will come on, however it will not change any of the functionality of your keyboard keys.

CURSOR KEYS

The cursor keys are the four arrow keys on the keyboard which allow you to move the cursor up, down, left and right in applications. In programs such as Windows Explorer, it moves the “focus” (selects the next item up, down, left, or right).

WINDOWS KEYS

Your LifeBook has three Windows keys, two Start keys and an Application key. The two Start keys display the Start menu. This button functions the same as your onscreen Start menu button. The Application key functions the same as your right mouse button and displays shortcut menus for the selected item. (Please refer to your Windows documentation for additional information regarding the Windows keys.)

FUNCTION KEYS

Your LifeBook has 12 function keys, F1 through F12. The functions assigned to these keys differ for each application. You should refer to your software documentation to find out how these keys are used.

The [Fn] key provides extended functions for the LifeBook and is always used in conjunction with another key.

- [Fn+F5]: Pressing [F5] while holding [Fn] allows you to toggle between video compensation and no compensation. (Video compensation controls spacing on the display. When it is enabled, displays with less than 800x600 pixel resolution will still cover the entire screen.)
- [Fn+F6]: Pressing [F6] repeatedly while holding [Fn] will lower the brightness of your display.
- [Fn+F7]: Pressing [F7] repeatedly while holding [Fn] will increase the brightness of the display.
- [Fn+F8]: Pressing [F8] repeatedly while holding [Fn] will decrease the volume of the speakers.
- [Fn+F9]: Pressing [F9] repeatedly while holding [Fn] will increase the volume of the speakers.
- [Fn+F10]: Pressing [F10] while holding [Fn] allows you to change your selection of where to send your display video. Each time you press the combination of keys you will step to the next choice. The choices, in order, are: built-in display panel only, both built-in display panel and external monitor or external monitor only.

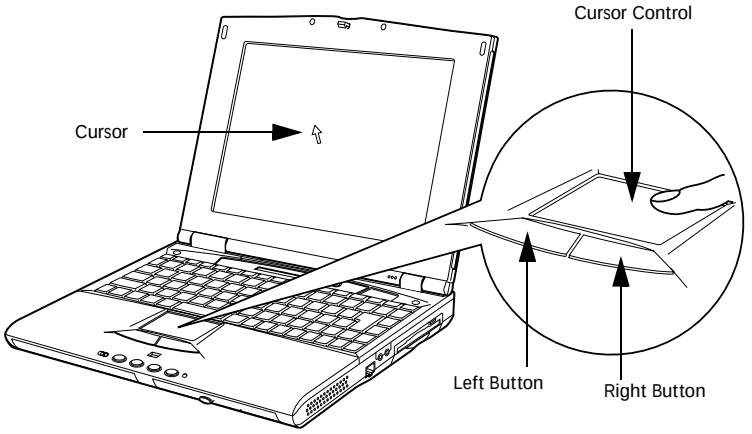


Figure 2-11 TouchPad pointing device

TouchPad Pointing Device

The TouchPad pointing device may come built into your Fujitsu LifeBook. It is used to control the movement of the pointer to select items on your display panel. The TouchPad is composed of a cursor control and a left and right button. The cursor control works the same way a mouse does, and moves the cursor around the display. It only requires light pressure with the tip of your finger, and the more pressure you use, the faster the cursor will move. The left and right buttons function the same as mouse buttons. The actual functionality of the buttons may vary depending on the application that is being used. *(Figure 2-11)*

POINT

An external mouse can be connected to either the USB or PS/2 port on your LifeBook, and used simultaneously with the TouchPad. However, if you boot the system with an external mouse connected the TouchPad will be disabled or enabled depending on the specifications in your BIOS settings. *(See BIOS Setup Utility on page 31 for more information)*

CLICKING

Clicking means pushing and releasing a button. To left-click, move the cursor to the item you wish to select, press the left button once, and then immediately release it. To right-click, move the mouse cursor to the item you wish to select, press the right button once, and then immediately release it. You also have the option to perform the clicking operation by tapping lightly on the TouchPad once. *(Figure 2-12)*



Figure 2-12 Clicking

DOUBLE-CLICKING

Double-clicking means pushing and releasing the left button twice in rapid succession. This procedure does not function with the right button. To double-click, move the cursor to the item you wish to select, press the left button twice, and then immediately release it. You also have the option to perform the double-click operation by tapping lightly on the TouchPad twice. *(Figure 2-13)*



Figure 2-13 Double-clicking

POINT

If the interval between clicks is too long, the double-click will not be executed.

DRAGGING

Dragging means pressing and holding the left button, while moving the cursor. To drag, move the cursor to the item you wish to move. Press and hold the left button while moving the item to its new location and then release it. Dragging can also be done using the

TouchPad. First, tap the TouchPad twice over the item you wish to move making sure to leave your finger on the pad after the final tap. Next, move the object to its new location by moving your finger across the TouchPad, and then release your finger. *(Figure 2-14)*

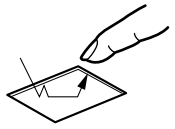


Figure 2-14 Dragging

TOUCHPAD CONTROL ADJUSTMENT

The Windows Control Panel allows you to customize your TouchPad with selections made from within the Mouse Properties dialog box.

Volume Control

Your LifeBook does not come with manual (dial) volume control. Volume control can only be done using the [Fn], [F8] and [F9] keys.

CONTROLLING THE VOLUME

To control the Volume, do one of the following:

- Press [Fn+F8] keys to decrease the volume.
- Press [Fn+F9] keys to increase the volume.
- Press [Fn+F3] keys to mute or un-mute the volume.

POINT

The volume can also be adjusted using the icon in the system tray.

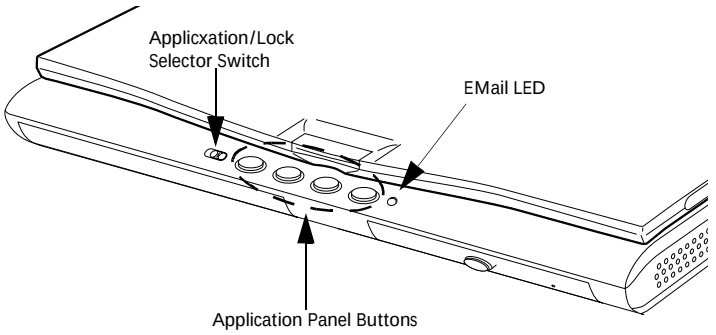


Figure 2-15 LifeBook Application Panel

LifeBook Application Panel

One of the unique features of your LifeBook is the LifeBook Application Panel. This panel allows you to launch applications with the touch of a button even when your system is off.

Your LifeBook is pre-installed with software utilities that you use to operate and configure your LifeBook Application Panel. These utilities are found in the Start menu, under Programs, then LifeBook Application Panel. They include a CD Player, Application Panel Setup, E-mail LED Setup, Application Panel Guide, Activate Panel and Deactivate Panel. The LifeBook Application Panel makes your LifeBook more than just another notebook computer.

APPLICATION PANEL BUTTONS

Application Launcher Buttons

Pressing any of the buttons will launch a user-defined application. Your LifeBook is pre-configured to launch the following programs:

- Application A – NotePad
- Application B – Calculator
- Internet – Internet Explorer
- E-Mail – Netscape Messenger

APPLICATION/LOCK SELECTOR SWITCH

Located at the far left of the panel, this switch allows you to select the function of the panel—either as an Application Launcher, a CD Player, or as a lock. Set the switch to the middle position when the Application Launcher buttons are not being used.

CONFIGURING YOUR LIFEBOOK APPLICATION PANEL

When you start Windows 98 Second Edition or Windows 2000 Professional, the LifeBook Application Panel is automatically activated. An icon resembling a finger pressing a button will appear on the system tray (the indented portion of the status bar where the clock is displayed). When you see this icon you will know that LifeBook Application Panel is active.

As an application launcher, the LifeBook Application Panel is very flexible, giving you a variety of options. To set up the Panel to best suit your needs, we have provided the Application Panel Setup utility that quickly and easily helps you make the most of this valuable feature.

To configure your LifeBook Application Panel with Application Panel Setup:

1. Click on Start.
2. Click on Programs.
3. Click on LifeBook Application Panel.
4. Click on Application Panel Setup.

The Application Panel Setup utility will appear. There are tabs that correspond to the application buttons on the LifeBook Application Panel.

POINT

The tabs in Application Panel Setup may not be in the same order as the buttons on your LifeBook. Please carefully select the tab you wish to change.

To change an application associated with the Application buttons, click on the tab for the button you would like to reconfigure – for example, Application A. Click on Browse from Start Menu, scroll down the list of applica-

tions, click on the application you wish to launch with this button, and then click OK. The button will now launch the new application.

The Internet tab is different. It comes set to launch your Windows 98 Second Edition or Windows 2000 Professional default Internet browser, (Internet Explorer, unless you have changed this in Windows 98 Second Edition or Windows 2000 Professional). In order to reconfigure it to launch another program follow these steps:

1. Click on Other from the Internet browser box.
2. Click on Browse from Start Menu.
3. Scroll down the list of applications, and the click on the application you wish to launch with this button.
4. Click OK.

The button will now launch the new application. If you want to return to launching your Windows 98 Second Edition or Windows 2000 Professional default Internet browser with this button, you need only click on "Default Internet Browser" from the Internet browser box. Be aware that you will erase the settings for the "other application". If you wish to go back to launching the "other application" from this button, you will need to reconfigure it as described above.

When you have finished with Application Panel Setup, click on OK, and the new settings will take effect. You can reconfigure your LifeBook Application Panel as often as you like.

POINT

The Internet or E-mail buttons can be configured to launch any application you wish, not just an Internet browser or e-mail program.

Enabling/disabling Application Launcher button

At the bottom of each application setup page are two selectable options. The first will enable/disable the button when your notebook is in Standby mode, and the second will enable/disable the button when your notebook is in the pseudo-off state. You can enable/disable either or both of these functions simply by clicking on the option.

USING THE E-MAIL NOTIFICATION LED

POINT

To use the E-mail LED notification, you must have access to a POP3 Server with no Security Password Authentication. Contact your service provider to determine if they support POP3 without Security Password Authentication.

To configure the E-mail Notification LED:

1. Click on Start.
2. Click on Programs.
3. Click on LifeBook Application Panel.
4. Click on E-mail LED Setup.
5. The E-mail LED Setup screen will appear. Choose the type of connection: LAN or Dial up.
   - If LAN: Click on LAN. Enter the POP3 Server name, your account name and password for that account. Consult your Service provider if you do not know or are unsure of the information requested.
   - If Dial Up: Click on Dial Up. Choose the Dial up configuration (as previously set in Dial Up Networking) you wish to retrieve mail from. Enter the POP3 Server name, your account name and password for that account. The account name and password should be the same information you entered in the Dial UP configuration. After all the information has been entered, test the connection by clicking on "Testing connection with current setting". If an error occurs, check the settings and information on Dial Up Network and E-mail LED notification.

Configure the E-mail button (see *Configuring Your LifeBook Application Panel*) to launch the mail software you want to use, i.e. Outlook Express, Netscape Messenger, etc. You can also adjust the LED blinking time. The default setting is for 60 seconds after mail has been retrieved.

After the setup (Dial Up Networking/E-mail/E-mail LED) is completed, you are ready to retrieve mail. When you press the E-mail button, your system will establish connection with your provider, check for and retrieve new mails, terminate the connection, and activate the blinking LED to alert you of new mail.

DESKTOP CONTROL PANEL

Your LifeBook includes a desktop control panel for your notebook's desktop that you can use at any time.

To use the desktop control panel:

1. Click on Start.
2. Click on Programs.
3. Click on Lifebook Application Panel.
4. Click on Display CD Player.

The desktop control panel will appear in the upper right corner of your screen. To close the panel:

1. Click on the "x" button.

To minimize the panel:

2. Click on the "-" button.

You can select from four appearances for your desktop control panel. Simply double click on the track display area of the panel, and a menu will appear which will allow you to select from a pull down menu. On the same pop-up are two other options: "Always on top" and "Continuous Play". If you click on "Always on top" the desktop controls will always be seen on your screen, no matter what other application you are running. If you click on "Continuous Play", your CD Player will automatically start over at the beginning as soon as it finishes the last track.

You can move the desktop control panel to anywhere on your desktop. Drag it by clicking on the track number display, holding it down, and dragging the control panel. When you place it where you would like, release the mouse button.

POINT

If you have your display set to 256K colors the basic display will appear no matter which one you select. You will need to set your display colors to more than 256K in order to select other display appearances.

Deactivating and Activating the LifeBook Application Panel

To deactivate the LifeBook Application Panel, follow these easy steps:

1. Click on Start.
2. Click on Programs.
3. Click on LifeBook Application Panel.
4. Click on Deactivate Panel.

To reactivate, follow the same procedure, except for step 4. Click on Activate Panel instead.

POINT

Every time you start Windows 98 Second Edition or Windows 2000 Professional, the LifeBook Application Panel is activated, even if you deactivated it prior to shutting down.

System Requirements and Precautions

System Requirements

- Operating System: Microsoft Windows 98 Second Edition or Windows 2000 Professional
- Memory: 32MB or more
- Hard drive: 2MB or more free space

Precautions

- LifeBook Application Panel uses the date and time settings of your LifeBook. If the date and time are off, you can adjust this setting in the Windows Control Panel.
- If you insert an audio CD which has both audio and data tracks into the CD-ROM drive, the CD Player may fail to play the first audio track.
- The Volume Up, Volume Down and Mute controls for the CD player desktop control panel adjusts the volume of the CD audio line only. It does not adjust your notebook's master software volume control or the manual volume on the LifeBook notebook.
- The CD player desktop control panel is designed to be displayed in High Color (16-bit) or in True Color (24-bit or more). If you have your notebook's display set for 256 colors or less, the CD Player control panel will display in a "basic" mode.

Pre-Installed Software

Your Fujitsu LifeBook comes with pre-installed software for playing audio and video files of various formats. The software configuration installed is dependent upon the operating system that is pre-installed on your system. In addition, there is file transfer software, virus protection software and Power Management software.

LEARNING ABOUT YOUR APPLICATION SOFTWARE

Tutorials

All operating systems and most application software have tutorials built-into them upon installation. We highly recommend that you step through the tutorial before you use an application.

Manuals

Included with your LifeBook you will find manuals for your operating system and other pre-installed software. Manuals that are not included are available online through the help system of the software. We recommend that you review these manuals for general information on the use of these applications.

LAPLINK 2000

(with Windows 98 Second Edition Only)

LapLink 2000, by LapLink.com, allows you to transfer files directly to other computers via an internal modem, a PC Card modem, the infrared port, the USB port, or a serial or parallel cable (cables not included). *(See your LapLink online help for proper operating procedures)*

MCAFEE.COM ACTIVESHIELD

ActiveShield, by McAfee.com, is an antivirus program that can be run after loading data or programs onto your LifeBook. It assists in the protection of the data currently residing on your hard disk from destruction or contamination. *(See your ActiveShield online help or manual for more information on how and when to run this program)*

MCAFEE.COM CLINIC (ONLINE COUPON)

Clinic, by McAfee.com, is a web-based antivirus program that can be run from the McAfee.com website after loading data or programs onto your LifeBook. It assists in the protection of the data currently residing on your hard disk from destruction or contamination. *(Go to http://www.mcafee.com for more information on how and when to run this program)*

PMSET 98

(with Windows 98 Second Edition Only)

PMSet 98 allows you to monitor and manage your battery status. *(See your PMSet 98 online help for more information on the correct way to use this program)*

POINT

As your LifeBook does not support the CPU Clock control, the option is not active within the Power Control menu of PMSet 98.

PC-DOCTOR FOR WINDOWS

PC-Doctor is primarily for use by your support representative when assisting you with troubleshooting.

ADOBE ACROBAT READER

The Adobe Acrobat Reader, located in the Service and Support Software folder, allows you to view, navigate, and print PDF files from across all of the major computing platforms.

LIFEBOOK APPLICATION PANEL SOFTWARE

Your LifeBook is pre-installed with software utilities that let you operate and configure your LifeBook Application Panel. These utilities are found under the Start menu, under Programs, then under LifeBook Application Panel. They include a CD Player, Application Panel Setup, Application Panel Guide, Activate Panel, Deactivate Panel and E-mail LED Setup.

3
Getting Started

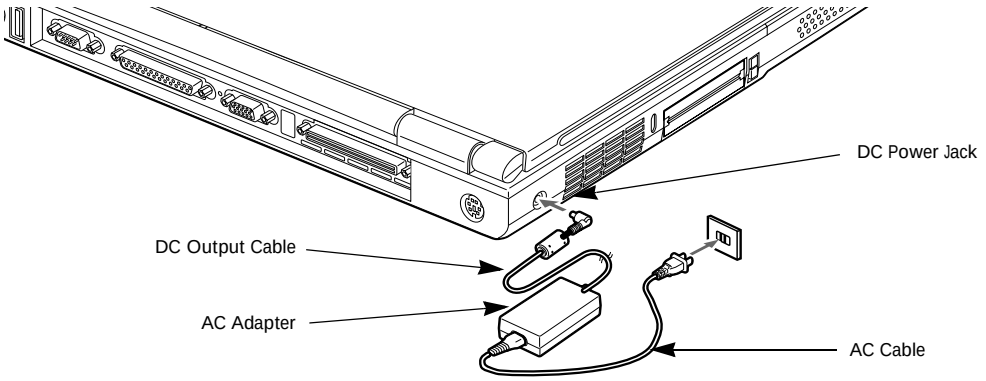


Figure 3-1 Connecting the AC Adapter

Power Sources

Your Fujitsu LifeBook has two possible power sources: a primary Lithium ion batterey or an AC Adapter.

CONNECTING THE POWER ADAPTERS

The AC adapter provides power for operating your LifeBook and charging the batteries.

Connecting the AC Adapter

1. Plug the DC output cable into the DC power jack of your LifeBook.
2. Plug the AC adapter into an AC electrical outlet.

Switching from AC Adapter Power to Battery Power

1. Be sure that you have at least one charged battery installed.
2. Remove the AC adapter.

CAUTION

The Lithium ion battery is not charged upon purchase. Initially, you will need to connect the AC adapter to use your LifeBook.

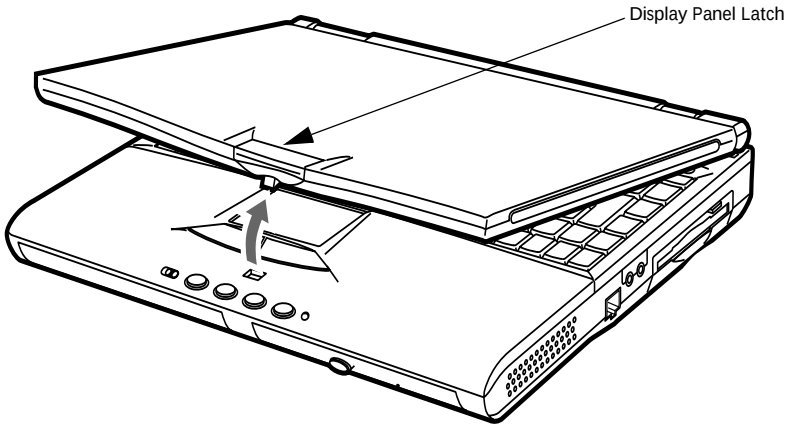


Figure 3-2 Opening the Display Panel

Display Panel

Your Fujitsu LifeBook contains a display panel that is backlit for easier viewing in bright environments and maintains top resolution through the use of active-matrix technology.

OPENING THE DISPLAY PANEL

1. Press the latch located at the top of the display panel. This releases the locking mechanism and raises the display slightly.
2. Lift the display panel backwards, being careful not to touch the screen, until it is at a comfortable viewing angle. *(Figure 3-2)*

ADJUSTING DISPLAY PANEL BRIGHTNESS

Once you have turned on your LifeBook, you may want to adjust the brightness level of the screen to a more comfortable viewing level. There are two ways to adjust the brightness keyboard and power management utility

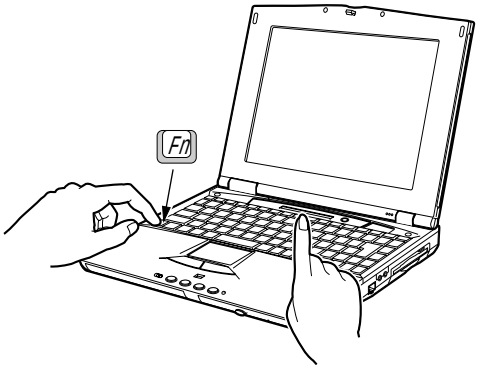


Figure 3-3 Adjusting the brightness

Keyboard

- [Fn+F6]: Pressing repeatedly will lower the brightness of your display.
- [Fn+F7]: Pressing repeatedly will increase the brightness of the display.

POINT

If using AC power your brightness setting is set to it's highest level by default. If using battery power your brightness settings is set to its middle level by default.

Power Management Utility (only in models with Windows 98 Second Edition)

1. Double-click on the PMSet icon in the lower right corner of your display.
2. Slide the brightness control bar to the right to increase brightness or left to decrease brightness.

You may need to readjust the brightness level periodically depending on your operating environment.

POINT

The higher the brightness level, the more power the LifeBook will consume and the faster your batteries will discharge. For maximum battery life, set the brightness level as low as possible.

CLOSING THE DISPLAY PANEL

1. Holding the edge of your display panel, pull it forward until it is flush with the body of your LifeBook.
2. Push down until you hear a click. This will engage the locking mechanism and prevent your display panel from opening unexpectedly.

Starting Your LifeBook

POWER ON

Power and Suspend/Resume Button

The Power and Suspend/Resume button is used to power on your LifeBook, to resume from Standby or Save-to-Disk mode, to place your LifeBook in Standby or Save-to-Disk mode or to power off. You can also turn off your LifeBook by choosing Shut Down from the Windows 98 Second Edition or Windows 2000 Professional Start menu.

Once you have connected your AC adapter or charged the internal Lithium ion Battery, you can press this button to Power On your LifeBook. *(See Figure 2-3 on page 9 for location)*

CAUTION

When you turn on your LifeBook be sure you have a power source. This means that at least one battery is installed and charged, or that the AC adapter is connected and has power.

CAUTION

Do not carry your LifeBook around with the power on or subject it to shocks or vibration, as you risk damaging your LifeBook.

When you Power On your LifeBook, it will perform a Power On Self Test (POST) to check the internal parts and configuration for correct functionality. If a fault is found, your LifeBook will emit an audio warning and/or an error message will be displayed. *(See Power On Self Test Messages on page 62 for more information)* Depending on the nature of the problem, you may be able to continue by starting the operating system or by entering the BIOS setup utility and revising the settings.

After satisfactory completion of the Power On Self Test (POST), your LifeBook will load your operating system.

CAUTION

Never turn off your LifeBook during the Power On Self Test (POST) or it will cause an error message to be displayed when you turn your LifeBook on the next time. *(See Power On Self Test Messages on page 62 for more information)*

BOOT SEQUENCE

The procedure for starting-up your Fujitsu LifeBook is termed the Bootup sequence and involves your LifeBook's BIOS. When your LifeBook is first turned on, the main system memory is empty, and it needs to find instructions to start up your LifeBook. This information is in the BIOS program. Each time you power up or restart your LifeBook, it goes through a boot sequence which displays a Fujitsu logo until your operating system is loaded. During booting, your LifeBook is performing a standard boot sequence including a Power On Self Test (POST). When the boot sequence is completed without a failure and without a request for the BIOS Setup Utility, the system displays the operating system's opening screen.

The boot sequence is executed when:

- You turn on the power to your LifeBook.
- You restart your LifeBook from the Windows Shut Down dialog box.
- The software initiates a system restart. Example: When you install a new application.
- You reset the system by pressing the three keys [CTRL+ALT+DEL].

BIOS SETUP UTILITY

The BIOS Setup Utility is a program that sets up the operating environment for your LifeBook. Your BIOS is set at the factory for normal operating conditions, therefore there is no need to set or change the BIOS' environment to operate your LifeBook.

The BIOS Setup Utility configures:

- Device control feature parameters, such as changing I/O addresses and boot devices.
- System Data Security feature parameters, such as passwords.

Entering the BIOS Setup Utility

To enter the BIOS Setup Utility do the following:

1. Turn on or restart your LifeBook.
2. Press the [F2] key once the Fujitsu logo appears on the screen. This will open the main menu of the BIOS Setup Utility with the current settings displayed.
3. Press the [RIGHT ARROW] or [LEFT ARROW] key to scroll through the other setup menus to review or alter the current settings.

BIOS Guide

A guide to your LifeBook's BIOS is available online. Please visit our service and support Web site at www.8fujitsu.com. Once there, click on the Self Help Center link, and select your LifeBook from the pull-down menu. Once you have done that, select the heading BIOS Guide from the pull-down menu.

POINT

If your data security settings require it, you may be asked for a password before the BIOS main menu will appear.

BOOTING THE SYSTEM WITH WINDOWS 98 SECOND EDITION

We strongly recommend that you do not attach any external devices and do not put a DVD/CD or floppy disk in any drive until you have gone through the initial power on sequence.

When you turn on your LifeBook for the first time, it will display a Fujitsu logo on the screen. If you do nothing the system will read the hard drive for the operating system software, flash the LifeBook configuration information on the screen, and then the Windows 98 Second Edition Welcome will begin.

Designed to accommodate the needs of users in many different countries, Windows 98 Second Edition needs to be configured the first time you use it. Windows 98 Second Edition has three parts:

- Getting Started: You have the opportunity to enter custom information for your configuration file and setup your modem so that your LifeBook will be prepared to dial out.
- Registration: Easy online registration for Windows 98 with Microsoft, and for your LifeBook with Fujitsu PC Corporation.
- Windows License Agreement and Final Settings: You have the opportunity to review the Windows 98 Second Edition License Agreement and then your configuration file will be generated.

POINT

You may click Cancel at any time within this process to shutdown Windows 98 Second Edition. You may restart this process at any time in the future, but you must complete it in order to use your computer.

Getting Started

Read the instructions on the screens carefully and fill in the information as directed. You will be asked for such items as the language you wish to use, the country in which you live, your first and last name, and about how you dial out from where you will be using your LifeBook. For the modem settings, enter your current location information where you will be using your LifeBook. If you are not connected to a phone line and plan to register at a later time, you may click the Skip button, and you will go directly to the Condition of Use page.

Once you have setup your LifeBook to dial out, Windows 98 Second Edition will make a free telephone call which will test these settings. If the call is unsuccessful, you will be returned to the phone settings page where you may try to fix them. If you are unable to fix the settings, please contact Fujitsu PC Service and Support. *(See Fujitsu PC Contact Information on page 3 for more information)* If you would simply like to move on, and register at a later time, you may click the Skip button, and you will go directly to the Condition of Use page.

Registration

If your connection is successful, you will go to the Registration Confirmation page. On this page simply enter the requested information, and then check the box at the bottom to register your copy of Windows 98 Second Edition with Microsoft. Once you have finished, click the Next button to continue.

POINT

If you do not register at this time you can do it later simply by double-clicking on the **LifeBook Registration** icon on your desktop and following the instructions.

You will then go through the Fujitsu registration process. Follow the instructions on the screens, and enter all of the necessary information. Be as specific as possible so that if you need help the service and support team will be able to serve you better.

Final Settings

The first part of your final settings is the Windows End User License Agreement. Read the agreement carefully. When you finish reading you must accept or reject the terms of the agreement and then click on the Finish button.

POINT

If you reject the terms of the license agreement you will be asked to review the license agreement for information on returning Windows 98 Second Edition or to shut down you LifeBook.

POINT

You cannot use your LifeBook until you have accepted the License Agreement. If you stop the process your LifeBook will return to the beginning of the Windows 98 Second Edition Welcome Process, even if you shut your LifeBook down and start it up again.

BOOTING THE SYSTEM WITH WINDOWS 2000 PROFESSIONAL

We strongly recommend that you do not attach any external devices and do not put a CD or floppy disk in any drive until you have gone through the initial power on sequence.

When you turn on your LifeBook for the first time, it will display a Fujitsu logo on the screen and then the Windows 2000 Professional setup screen will appear. The Windows 2000 Professional setup will prompt you through a series of screens. You will be asked to enter custom and computer information, user password, date and time, workgroup or computer domain and accept or reject the license agreement. Once you have entered all the information you will be asked to restart your computer.

POINT

If you reject the terms of the license agreement you will be asked to review the license agreement for information on returning Windows 2000 Professional or to shut down your LifeBook.

REGISTERING YOUR LIFEBOOK

What are the benefits of registering?

You will receive an identification label for your LifeBook, which, if your LifeBook is ever lost, may help in getting it returned to you. You also receive priority Personal Identification Number (PIN) technical support access and useful product mailings. Proof of purchase is not required if you register within 30 days of your purchase.

How do I register?

With Windows 98 Second Edition, it is a part of the Welcome process. If you do not register during the Welcome process you can double-click on the LifeBook Registration icon on your desktop and then follow the instructions. The LifeBook Registration icon is the only way to register Windows 2000 Professional online.

POINT

Make sure you have connected a phone line to your modem before you use E-Registration.

You may also complete the pre-printed registration form and either:

- Fax to 1-901-259-5700
- Mail to:
  Fujitsu PC Corporation
  5200 Patrick Henry Drive
  Santa Clara, Ca 95054
  Attn: Warranty Department
- Call: 1-800-8FUJITSU (1-800-838-5487)

You may also register on our Web site:

- www.8fujitsu.com. You will need to be set up with an Internet Service Provider (ISP) to use this option.

Power Management

Your LifeBook has many options and features for conserving battery power. Some of these features are automatic and need no user intervention, such as those for the internal modem. However, others depend on the parameters you set to best suit your operating conditions, such as those for the display brightness. Internal power management for your LifeBook may be controlled from settings made in your operating system, pre-bundled power management application*, or from settings made in BIOS setup utility.

Besides the options available for conserving battery power, there are also some things that you can do to prevent your battery from running down as quickly. For example, you can create an appropriate power saving profile, put your LifeBook into Suspend mode when it is not performing an operation, and you can limit the use of high power devices. As with all mobile, battery powered computers, there is a trade-off between performance and power savings.

** Available on LifeBook models with Windows 98 Second Edition pre-installed.*

POWER AND SUSPEND/RESUME BUTTON

When your LifeBook is active, the Power and Suspend/Resume button can be used to manually put your LifeBook into Suspend mode. Push the Power and Suspend/Resume button when your LifeBook is active, but not actively accessing anything, and immediately release the button. You will hear two short beeps and your system will enter Suspend mode.

If your LifeBook is suspended, pushing the Power and Suspend/Resume button will return your LifeBook to active operation. You can tell whether or not your system is in Suspend mode by looking at the Power indicator. *(See Figure 2-8 on page 15 for location)* If the indicator is visible and not flashing, your LifeBook is fully operational. If the indicator is both visible and flashing, your LifeBook is in Suspend mode. If the indicator is not visible at all, the power is off or your LifeBook is in Save-to-Disk mode. *(See Save-to-Disk Mode)*

SUSPEND MODE

Suspend or Standby mode in Windows 98 Second Edition or Windows 2000 Professional saves the contents of your LifeBook's system memory during periods of inactivity by maintaining power to critical parts. This mode will turn off the CPU, the display, the hard drive, and all of the other internal components except those necessary to maintain system memory and allow for restarting. Your LifeBook can be put in Suspend mode by:

- Pressing the Power and Suspend/Resume button when your system is turned on.
- Selecting Standby from the Windows Shut Down menu.
- Timing out from lack of activity.
- Allowing the battery to reach the Dead Battery Warning condition.

Your LifeBook's system memory typically stores the file(s) on which you are working, open application(s) information, and any other data required to support the operation(s) in progress. When you resume operation from Suspend mode, your LifeBook will return to the point where it left off. You must use the Power and Suspend/Resume button to resume operation, and there must be an adequate power source available, or your LifeBook will not resume.

CAUTION

If you are running your LifeBook on battery power, be aware that the battery continues to discharge while your LifeBook is in Suspend mode, though not as fast as when fully operational.

POINT

Disabling the Suspend/Resume button prevents it from being used to put your LifeBook in Suspend or Save-to-Disk mode. The resume function of the button cannot be disabled.

CAUTION

The Suspend or Hibernation (Save-to-Disk) mode should not be used with certain PC Cards. Check your PC Card documentation for more information.

When PC Cards or external devices are in use, Hibernation (Save-to-Disk) mode cannot return to the exact state prior to suspension because all of the peripheral devices will be re-initialized when the system re-starts.

POINT

If your LifeBook is actively accessing information when you enter the Suspend or Hibernation (Save-to-Disk) mode, changes to open files are not lost. The files are left open and memory is kept active during Suspend mode, or the memory is transferred to the internal hard drive during Hibernation mode.

POINT

The main advantage of using the Hibernation (Save-to-Disk) function is that power is not required to maintain your data. This is particularly important if you will be leaving your LifeBook in a suspended state for a prolonged period of time. The drawback of using Hibernation mode is that it lengthens the power down and power up sequences and resets peripheral devices.

POINT

Save-to-Disk mode requires allocating a significant amount of hard drive capacity for saving all system memory, which reduces your usable disk space. When you purchase your LifeBook it will have space allocated for the memory installed. If you upgrade the original system by adding a memory upgrade module without changing the size of your Save-to-Disk allocation you will get an error message when you try to activate Save-to-Disk mode and it will not work. Use the PHDISK Utility to increase the size of the Save-to-Disk file, SAVE2DSK.BIN. You can download the Save-to-Disk File Allocation information from our Web site at www.8fujitsu.com. If you need help, contact your support representative for recommendations.

HIBERNATION (SAVE-TO-DISK) FEATURE

The Hibernation feature saves the contents of your LifeBook's system memory to the hard drive as a part of the Suspend/Resume mode. You can enable or disable this feature.

Enabling or Disabling the Hibernation Feature

The default setting is not enabled. To enable or disable the Hibernation feature follow these easy steps:

1. From the Start menu, select Settings, and then select Control Panel.
2. From the Control Panel, select Power Management.
3. Select Hibernation tab. Select the box to enable or disable this feature.

Using the Hibernation Feature

1. From the Start menu, select Settings, and then select Control Panel.
2. From the Control Panel, select Power Management.
3. Select Advanced tab, then select Hibernate from the pull-down menu for Power buttons.

STANDBY MODE

Standby mode is one of the power management parameters. When Standby mode is activated, your LifeBook puts the CPU in low-speed operation, shuts off the display and turns off the hard drive when there is no activity (keystroke, pointer action, sound generation, video display change, modem transmission or reception, etc.) on your LifeBook for the user selected time-out period. Any activity will cause your LifeBook to return to normal operation automatically. This feature is independent of the Power and Suspend/Resume button.

DISPLAY TIMEOUT

The Video Timeout is one of the power management parameters. This feature saves power by turning off the display if there is no keyboard or pointer activity for the user selected timeout period. Any keyboard or pointer activity will cause the display to restart automatically. This feature is independent of the Power and Suspend/Resume button and can be enabled and disabled in Windows and BIOS setup utility. *(See BIOS Setup Utility on page 31 for more information)*

HARD DISK TIMEOUT

The Hard Disk Timeout is another one of the power management parameters. This feature saves power by turning off the hard drive if there is no hard drive activity for the user selected timeout period. Any attempt to access the hard drive will cause it to restart automatically. This feature is independent of the Power and Suspend/Resume button and can be enabled and disabled in Windows and BIOS setup utility. *(See BIOS Setup Utility on page 31 for more information)*

WINDOWS 98 SECOND EDITION POWER MANAGEMENT

Power Management

The Power Management icon located in the Windows 98 Second Edition Control Panel allows you to configure some of the power management settings. For example, you can use the Power Management to set the timeout values for turning off the display and hard disks whether you are running the LifeBook on battery power or one of the adapters. *(See Pre-Installed Software on page 25 for more information)*

ACPI and Windows 98 Second Edition

Short for Advanced Configuration & Power Interface, a power management specification developed by Intel, Microsoft, and Toshiba. ACPI, which is part of the Windows 98 Second Edition operating system, enables the operating system to control the amount of power given to each device attached to the computer. With ACPI, the operating system can turn off peripheral devices, such as the CD-ROM player, when it is not in use. Your operating system has been pre-configured for ACPI power management.

RESTARTING THE SYSTEM

If your system is on and you need to restart it, be sure that you use the following procedure.

1. Click the Start button, and then click Shut Down.
2. Select the Restart option from within the Windows Shut Down dialog box.
3. Click OK to restart your LifeBook. Your LifeBook will shut down and then reboot.

CAUTION

Turning off your LifeBook without exiting Windows or turning on your LifeBook within 10 seconds of the LifeBook being shut off may cause an error when you start the next time.

POWER OFF

Before turning off the power by choosing Shut Down from the Windows 98 Second Edition or Windows 2000 Professional Start menu, check that the Hard Drive, CD-ROM, PC Card and Floppy Disk Drive Access indicators are all Off. *(See Figure 2-8 on page 15)* If you turn off the power while accessing a disk or PC Card there is a risk of data loss. To assure that your LifeBook shuts down without error, use the Windows shut down procedure.

CAUTION

Never turn your LifeBook off while an application is running. Be sure to close all files, exit all applications, and shut down your operating system prior to turning off the power with the power switch. If files are open when you turn the power off, you will lose any changes that have not been saved, and may cause disk errors.

Using the correct procedure to shut down from Windows allows your LifeBook to complete its operations and turn off power in the proper sequence to avoid errors. The proper sequence is:

1. Click the Start button, and then click Shut Down.
2. Select the Shut Down option from within the Windows Shut Down dialog box.
3. Click OK to shutdown your LifeBook.

If you are going to store your LifeBook for a month or more see Care and Maintenance Section.



4 User Installable Features

Lithium ion Battery

Your Fujitsu LifeBook has a Lithium ion battery that provides power for operating your LifeBook when no external power source is available. The battery is durable and long lasting, but should not be exposed to extreme temperatures, high voltages, chemicals or other hazards.

The Lithium ion battery operating time may become shorter if it is used under the following conditions:

- When used at temperatures that exceed a low of 5°C (40°F) or a high of 35°C (95°F). Extreme temperatures not only reduce charging efficiency, but can also cause battery deterioration. The charging icon on the Status Indicator panel will flash when you try to charge a battery that is outside its operating temperature range. *(See Battery Charging Indicators on page 16 for more information)*
- When using a high current device such as a modem, CD-ROM drive or the hard drive, using the AC adapter will conserve your battery life.

CAUTION

Actual battery life will vary based on screen brightness, applications, features, power management settings, battery condition and other customer preferences. CD-ROM or hard drive usage may also have a significant impact on battery life. The battery charging capacity is reduced as the battery ages. If your battery is running low quickly, you should replace it with a new one.

CAUTION

Do not leave a faulty battery in your LifeBook. It may damage your AC adapter or your LifeBook itself. It may also prevent operation of your LifeBook by draining all available current into the bad battery.

WARNING

Under federal, state, or local law it may be illegal to dispose of batteries by putting them in the trash. Please take care of our environment and dispose of batteries properly. Check with your local government authority for details regarding recycling or disposing of old batteries. If you cannot find this information elsewhere, contact your support representative at 1-800-8FUJITSU (1-800-838-5487).

RECHARGING THE BATTERIES

If you want to know the condition of the primary Lithium ion battery, check the Battery Level indicator located on the Status Indicator panel. The indicator changes as the battery level changes.

The Lithium ion battery is recharged internally using the AC adapter. To recharge the battery make sure the battery is installed in your LifeBook and connect the AC adapter.

POINT

Make sure that the Battery Charging indicator and the percentage charge is shown inside the Battery Level icon on the Status Indicator Panel.

There is no memory effect on the Lithium ion battery therefore you do not need to discharge the battery completely before recharging. The charge times will be significantly longer if your LifeBook is in use while the battery is charging. If you want to charge the battery more quickly, put your LifeBook into Suspend mode, or turn it off while the adapter is charging the battery. *(See Power Management on page 34 for more information on Suspend mode and shutdown procedure)*

CAUTION

Using heavy current devices such as Modem or frequent CD-ROM accesses may prevent charging completely.

Low Battery State

When the battery is running low, a low battery warning will appear on the screen. If you do not provide a new power source, the batteries will continue to discharge until they are too low to operate. When this happens, another warning message will appear and the Battery Level indicator will show dead battery. Your LifeBook will go into Suspend mode to try to protect your data for as long as possible. There is no guarantee that your data will not be lost once the LifeBook reaches this point.

CAUTION

When the low battery message first appears, save all your active data and Shutdown your LifeBook or put it into Suspend mode until you can provide a new power source. You should immediately provide power to your LifeBook from a charged battery or an AC power adapter.

CAUTION

When you are in Suspend mode there must always be at least one power source active. If you turn off the power with the power switch, or remove all power sources while your LifeBook is in Suspend mode, any data that has not been saved to the hard drive will be lost.

Dead Battery Suspend mode shows on the Status indicator just like the normal Suspend mode. Once your LifeBook goes into Dead Battery Suspend mode you will be unable to resume operation until you provide a source of power either from an adapter, or a charged battery. Once you have provided power, you will need to press the Suspend/Resume button to resume operation. In the Dead Battery Suspend mode, your data can be maintained for some time, but if a power source is not provided promptly, the Power indicator will stop flashing and go out, meaning that you have lost the data that was not stored. Once you provide power, you can continue to use your LifeBook while an adapter is charging the battery.

Shorted Batteries

The Status Indicator panel uses a symbol inside the battery outline of the Battery Level indicator to display the operating level available in that battery. *(See Figure 2-9 on page 15)* If this display shows a Shorted Battery, it means that the battery is damaged and must be replaced so it does not damage any other parts of your LifeBook.

REPLACING THE BATTERY

With the purchase of an additional battery, you can have a fully charged spare to swap with one that is not charged. *(Figure 4-1)*

Follow the steps below to replace a battery:

1. Have a charged battery ready to install.
2. Shut down your LifeBook and disconnect the AC adapter.
3. Slide the battery release panel open.
4. Remove the battery from the bay.
5. Slide the new battery into the bay.
6. Slide the battery release panel close.
7. Plug in the AC adapter and turn the power on.

CAUTION

If the Lithium ion battery connector is not fully seated, you may not be able to use your LifeBook or charge your battery.

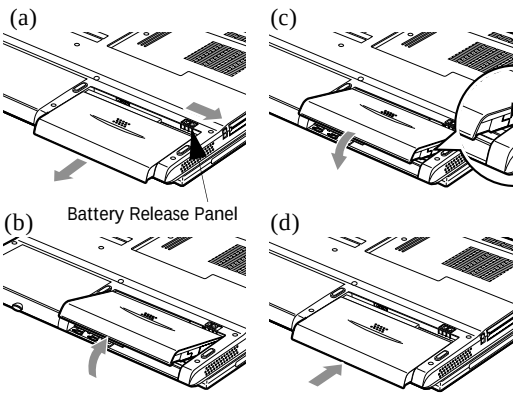


Figure 4-1 Replacing the Battery

Floppy Disk Drive

Your Fujitsu LifeBook has a 3.5" floppy disk drive with the ability to read and write information on removable 1.44MB and 720KB floppy disks.

LOADING A DISK

To load a disk into your disk drive, follow these easy steps:

1. Position the disk so that its label is facing upwards and the shutter side is pointing towards the drive. *(Figure 4-2)*
2. Push the disk into the drive until the Eject button pops out and you hear a click.

POINT

When there is no disk in the drive, the Eject button is flush with your LifeBook.

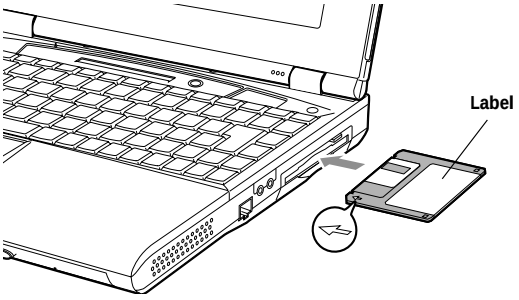


Figure 4-2 Loading a Floppy Disk

EJECTING A DISK

To eject a disk from the disk drive, follow these easy steps:

1. Check that the Floppy Disk Drive Access indicator is inactive.
2. Press the Eject button. This will push your disk partially out of the drive.
3. Remove the disk.

CAUTION

If you eject the disk while the Floppy Disk Drive Access indicator is active, there is a risk of damaging the data on the disk, the disk itself or even the disk drive.

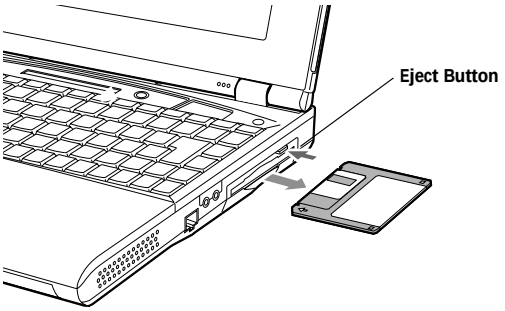


Figure 4-3 Ejecting a Floppy Disk

PREPARING A DISK FOR USE

Before you can use a new disk, it needs to be prepared so your LifeBook knows where to store information. This preparation is called formatting or initializing a disk. You will need to format new disks, unless they are preformatted. *(Please refer to your operating system manual for step-by-step instructions on formatting a disk.)*

To prevent accidental erasure of the data stored on a disk, slide the "write protect" tab until a small hole is exposed. This sets the disk into a protected state where nothing can be added or removed. If you want to add or remove data on a protected disk, slide the "write protect" tab to close the small hole. *(Figure 4-4)*

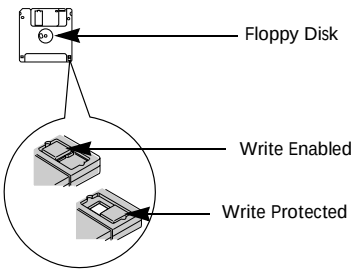


Figure 4-4 Floppy Disk Write Protect

CAUTION

Formatting a floppy disk that already contains data will erase all of the information on the disk.

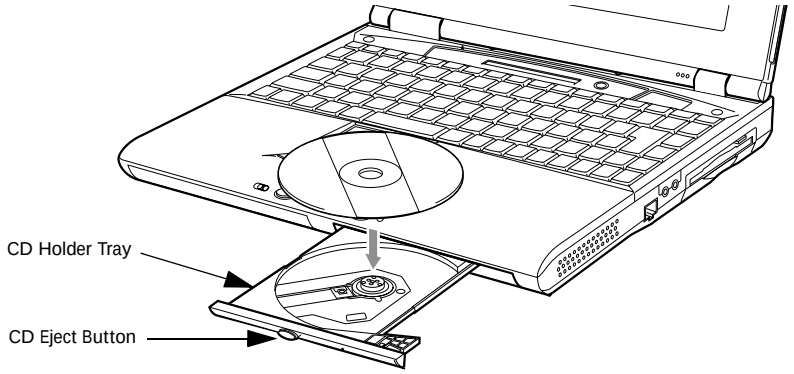


Figure 4-5 CD-ROM Drive

CD-ROM Drive

Your Fujitsu LifeBook contains a 24x max CD-ROM player. This gives you access to both software and audio CDs. *(Figure 4-5)*

CAUTION

Do not operate your CD-ROM drive unless your LifeBook is sitting on a flat surface. Using a CD when the drive is not level may damage the drive or prevent proper operation.

LOADING A CD

To load a CD into your CD-ROM drive, follow these easy steps:

1. Push and release the eject button on the front of the CD-ROM drive to open the holder tray. The tray will come out of the LifeBook a short distance.
2. Gently pull the tray out until a CD can easily be placed in the tray.

CAUTION

There may be a protective sheet in the tray when it was shipped, please make sure it is removed before operating.

3. Place the CD into the tray, label side up, with the hole in the center of the CD. Snap the CD onto the raised circle in the center of the tray.
4. Gently push the holder tray back in until you hear a click. *(Figure 4-6)*

POINT

If you have disabled the Auto Insert Notification Function, you will have to start the CD from your desktop, as your LifeBook will not automatically recognize that a CD has been loaded.

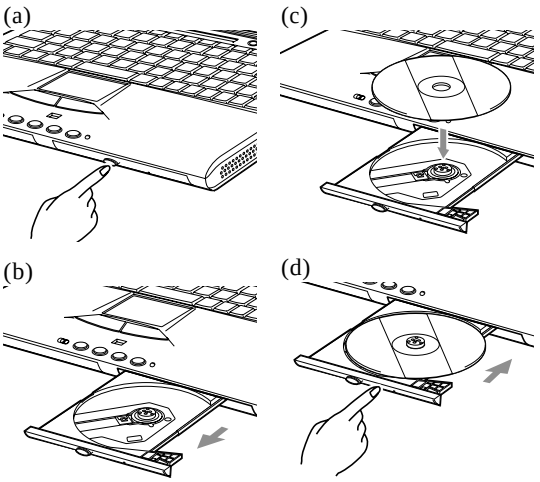


Figure 4-6 Loading a CD

REMOVING A CD

1. Push and release the eject button on the front of the CD-ROM drive. This will stop the CD and the holder tray will come out of the LifeBook a short distance. *(Figure 4-7)*
2. Gently pull the tray out until the CD can easily be removed from the tray.*(Figure 4-7)*
3. Carefully remove the CD from the holder tray. *(Figure 4-7)*
4. Gently push the holder tray back in until you hear a click. *(Figure 4-7)*

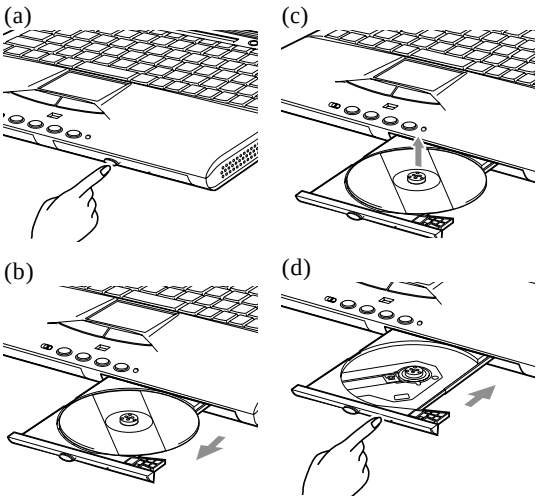


Figure 4-7 Removing a CD.

AUTO INSERT NOTIFICATION FUNCTION

(only in models with Windows 98 Second Edition)

The Auto Insert Notification function allows your LifeBook to automatically start a CD as soon as it is inserted in the CD-ROM drive and the tray is closed. Your LifeBook will begin playing an audio CD or will start an application if the CD includes an auto run file.

Disabling Auto Insert Notification Function

To disable the Auto Insert Notification function, follow these easy steps:

1. Save all data and close all open applications.
2. From the Start menu, select Settings, and then select Control Panel.
3. Double-click the System icon. This will open the System Properties dialog box.
4. Select the Device Manager tab to display the device lists for your LifeBook.
5. Click on the + to the left of the CD-ROM drive icon. The treeview will expand to show the CD-ROM drive manufacturer's name and model number.
6. Double-click on the CD-ROM drive manufacturer's name and model number. This will open the CD-ROM drive manufacturer's name and model number dialog box.
7. Select the Settings tab and then remove the check mark in the Auto Insert Notification box to turn it off.
8. Click OK.
9. Click Close in the System Properties dialog box, then click Yes in the System Settings Change pop-up window when it asks you to restart your machine and activate this change.

The Auto Insert Notification function can be re-activated by repeating this process and placing a check mark in the Auto Insert Notification box to turn it back on.

Hard Disk Drive

Your Fujitsu LifeBook contains a 6GB internal hard disk drive.

FORMATTING THE HARD DISK DRIVE

The internal hard disk drive is formatted, or initialized, at the factory. You do not need to format it under normal circumstances. If you decide to reformat due to corruption or upgrade, please refer to your operating system documentation for the correct procedure.

⚠ WARNING

Reformatting the hard disk drive will erase all of the data currently stored on it, including the operating system and installed programs.

Before you reformat your hard disk drive, please note:

- Any data that currently resides on your hard disk drive must be backed-up to floppy disks or other data storage media, or it will be permanently lost. These back-up disks can then be used to re-install and restore your data. *(See your operating system manual for more information on backing-up your data files)*
- All application software that is installed on the hard disk drive, must be re-installed from the original source.
- The factory-installed software, including the operating system, can be restored using the Recovery CD that came with your LifeBook.

MODULAR HARD DISK DRIVE

Your LifeBook may contain a modular hard disk drive in addition to the internal hard disk drive. If your LifeBook has a modular hard disk drive you will need to format the drive before using it.

Formatting the Modular Hard Disk Drive

1. Boot the system. When the Fujitsu logo appears press the [F8] key to bring up the Microsoft Windows Startup Menu.
2. Select option 6 command prompt only, using the arrow key and press [Enter].
3. At the `C:>` prompt, type `Fdisk` and press [Enter].
4. You will see a long message appear on the screen. At the bottom of the message you will see the option, `Do you wish to enable large disk support (Y/N)...? [N].` Type Y to change the option in the last statement to yes and press [Enter] to continue.
5. You are now in the FDISK Options menu. Type 5 to select Change Current fixed disk drive and press [Enter].
6. The next Change Current Fixed Disk Drive screen displays info for both Primary(C:) & Secondary (D:) Disks. Type 2 at the Fixed Disk Drive Number and press [Enter].
7. You are now back in the FDISK Options menu for drive D:. Press 4 in the Enter Choice: [ ] field to go the Display partition information option and press [Enter].
8. If the message `No partitions defined` appears at the bottom of the Display Partition Information screen, press [Esc].
9. You are now back in the FDISK Options menu. Press 1 to change the Enter Choice: [ ] field to the Create DOS partition or Logical DOS Drive option (it should already be set to 1 as the default) and press [Enter].
10. Press [Enter] again to select the default setting (#1) Create Primary DOS Partition.
11. Fdisk will verify drive integrity and ask you if you wish to use the maximum available size for Primary DOS Partition. Type Y for Yes. A message appears "Primary DOS partition created, drive letters changed as added." Press Esc to continue. In this case the partition usage will be 100% or 10GB, this number may vary depending on your drive size.
12. You are now back in the FDISK Options menu. Press 4 to display your partitions info.
13. You should see the following in the Create Primary DOS Partition screen:

```
Partition   Status Type   Volume
Label
D:1         PRI DOS
Mbytes      System        Usage
6194*       Unknown       100%
Primary DOS Partition created
```

14. Press [Esc] three times to exit the Create Primary DOS Partition screen and FDISK Options menu.
15. Restart your eB. when the Fujitsu logo appears, press the [F8] key to bring up the Microsoft Startup Menu.
16. Type `FORMAT D`: to format the hard drive. When formatting is done, restart your LifeBook.

Your LifeBook will now detect the hard disk drive and activate it within your system. The drive letters associated with the hard disk drive will be created and listed under My Computer and Windows Explorer.

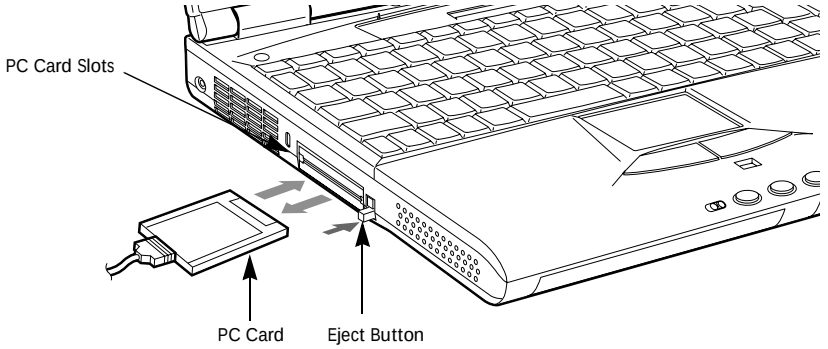


Figure 4-8 Installing/Removing PC Cards

PC Cards

Your LifeBook supports two Type II and one Type III PC Cards, which can perform a variety of functions depending on which type of PC Card you install. *(Figure 4-8)*

Some available PC Cards:

- Zoomed Video
- Fax/data modem
- Local area network (LAN)
- IDE solid-state disk
- SCSI
- Other PC Cards that conform to PCMCIA™ 2.1 or CardBus standards.

For further information, refer to the instructions supplied with your PC Card.

POINT

Windows 2000 Professional does not support Zoomed video cards.

INSTALLING PC CARDS

PC Cards are installed in the PC Card slot. To install a PC Card, follow these easy steps:

WARNING

Installing or removing a PC Card during your LifeBook's shutdown or bootup process may damage the card and/or your LifeBook.

WARNING

Do not insert a PC Card into a slot if there is water or any other substance on the card as you may permanently damage the card, your LifeBook or both.

1. See your PC Card manual for specific instructions on the installation of your card. Some PC Cards may require your LifeBook to be Off while installing them.
2. Make sure there is no PC Card currently in the slot. If there is, see Removing PC Cards.
3. Insert your PC Card into the slot with the product label facing up.
4. Push the card into the slot firmly until it is seated in the opening.

REMOVING PC CARDS

To remove a PC Card, perform the following steps:

CAUTION

Windows 98 Second Edition has a shutdown procedure for PC Cards that must be followed before removing a card. Review your operating system manual for the correct procedure.

Windows 2000 Professional PC Cards should be stopped using the Unplug or Eject Hardware utility on the taskbar. Refer to your operating system manual for the correct procedure.

1. See your PC Card manual for specific instructions on removing your card. Some PC Cards may require your LifeBook to be Off while removing them.

POINT

If the dialog box states that the device cannot be removed, you must save all of your open files, close any open applications and shut down your LifeBook. Once your LifeBook has been shut down, you must turn Off the power using the power switch.

2. Press the eject button adjacent to the slot containing the PC Card you want to remove. The first time you press it, the eject button will pop up. Push the

protruding button to release the card. The card will be ejected from the PC Card slot.

3. Remove the card from the slot.

CAUTION

If the PC Card has an external connector and cable, do not pull the cable when removing the card.

Memory Upgrade Module

Your LifeBook comes with 64MB high speed Synchronous Dynamic RAM (SDRAM) factory installed. To increase your LifeBook's memory capacity, you may install an additional memory upgrade module. You can also replace the original memory module with a higher capacity module. The memory upgrade must be a dual-in-line (DIMM) SDRAM module, however it can be any capacity up to 192MB (total).

CAUTION

Do not remove any screws from the memory upgrade module compartment, except the ones specifically shown in the directions for installing and removing the memory upgrade module.

INSTALLING A MEMORY UPGRADE MODULE

To install a memory upgrade module follow these steps:

WARNING

You must turn off power before installing the memory upgrade module.

1. Turn off power to your LifeBook using the power switch, and remove any power adapter.
2. Turn your LifeBook face down on a clean work surface.
3. Using a Phillips head screwdriver, remove the screw securing the RAM Expansion cover. Remove the cover.

CAUTION

The memory upgrade module can be severely damaged by electrostatic discharge (ESD). Be sure you are properly grounded when handling and installing the module.

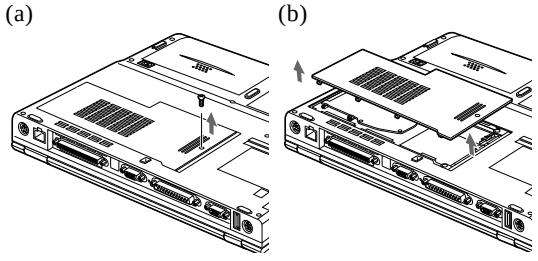


Figure 4-9 Opening the Memory Upgrade Compartment

4. Align the connector edge of the memory upgrade module, chip side up, with the connector slot in the compartment.
5. Insert the memory upgrade module at a 45º angle and press it firmly onto the connector.
6. Press the memory upgrade module down into the compartment until it locks underneath the retaining clip. You will hear a click when it is properly in place.
7. Replace the cover over the memory tray and reinstall the three screws.

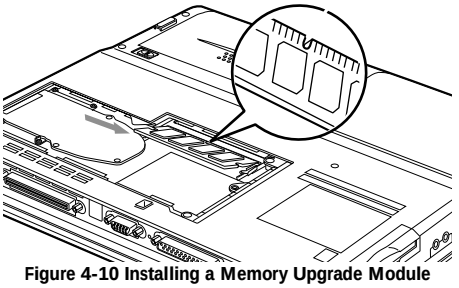


Figure 4-10 Installing a Memory Upgrade Module

POINT

The memory upgrade module is not something you routinely remove from your LifeBook. Once it is installed, you can leave it in place unless you want to increase system memory capacity.

REMOVING A MEMORY UPGRADE MODULE

1. Perform steps 1 through 3 of Installing a Memory Upgrade Module.
2. Pull the clips sideways away from each side of the memory upgrade module at the same time.
3. While holding the clips out, remove the module from the slot by lifting it up and pulling towards the rear of your LifeBook. *(Figure 4-11)*

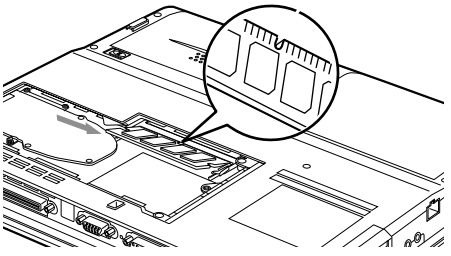


Figure 4-11 Removing a Memory Upgrade Module

4. Store the memory upgrade module in a static guarded sleeve.
5. Replace the cover by following steps 9 and 10 of Installing a Memory Upgrade Module.

POINT

After changing your memory module configuration, you must complete the Resetting the Hibernation (Save-to-Disk) Parameters procedure in order for the Hibernation (Save-to-Disk) mode to operate properly on your LifeBook. *(See Hibernation (Save-to-disk) Feature on page 35 for more information)*

CHECKING THE COMPUTER RECOGNITION OF NEW MEMORY CAPACITY

Once you have changed the system memory capacity by either adding or removing a memory upgrade module, be sure to check that your LifeBook has recognized the change.

You can check the memory capacity by looking at the main menu of the BIOS setup:

1. Turn on the power to your LifeBook using the power switch.
2. Allow the system to start booting and press the F2 key once the Fujitsu logo appears on the screen. This will open the main menu of the BIOS setup with the current settings displayed. *(See BIOS Setup Utility on page 31 for more information)*

The System Memory and the Extended Memory capacity, as detected by your LifeBook during the Power On Self Test (POST), are displayed at the bottom of the main menu screen. The chart below shows you the possible displays that can be shown on the main menu screen.

POINT

If the total memory displayed is incorrect, check that your memory upgrade module is properly installed. (If the module is properly installed and the capacity is still not correctly recognized, see the Troubleshooting section starting on page 53)

Installed			Displayed	
On Board	Slot 1	Total RAM Installed	System Memory	Extended Memory
64MB	0MB	64MB	640K	63MB
64MB	32MB	96MB	640K	95MB
64MB	64MB	128MB	640K	127MB
64MB	128MB	192MB	640K	191MB

Device Ports

Your LifeBook comes equipped with multiple ports to which you can connect an external device including: disk drives, keyboards, modems, printers, etc.

MODEM (RJ-11) TELEPHONE JACK

The modem (RJ-11) telephone jack is used for an internal modem. To connect the telephone cable follow these easy steps: *(See Figure 2-4 on page 11 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Plug the other end of the telephone cable into a telephone outlet.

WARNING

Do not connect the internal modem to a Digital PBX as it may cause serious damage to the modem or your LifeBook. It should be noted that some hotels use the Digital PBX systems, please be sure to find out BEFORE you connect your modem. Consult your PBX manufacturer's documentation for more information.

CAUTION

The internal modem is designed to the ITU-T V.90 standard. Its maximum speed of 53000bps is the highest allowed by the FCC, and its actual connection rate depends on the line conditions. The maximum speed is 33600bps at upload.

CAUTION

The internal modem on all Fujitsu LifeBooks is not qualified for use with telephone systems outside the United States and Canada and may not operate in other countries.

PARALLEL PORT

The parallel port, or LPT port, allows you to connect parallel devices, such as a printer to your LifeBook. In order to connect a parallel interface device follow these easy steps: *(See Figure 2-6 on page 13 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Tighten the two hold-down screws, located on each end of the connector.

SERIAL PORT

The serial port, or COMM port, allows you to connect serial devices, such as printers or scanners. In order to connect a serial interface device follow these easy steps: *(See Figure 2-6 on page 13 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Tighten the two hold-down screws, located on each end of the connector.

PS/2 PORT

The PS/2 port allows you to connect an external keyboard, and/or numeric keypad and mouse. In order to connect a PS/2 interface device follow these easy steps: *(See Figure 2-6 on page 13 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

POINT

A mouse, keyboard, or keypad may be installed and automatically recognized by your LifeBook without restarting or changing setups.

POINT

The use of two PS/2 devices simultaneously from the port requires a PS/2 splitter.

UNIVERSAL SERIAL BUS PORT

The Universal Serial Bus port (USB) allows you to connect USB devices such as external game pads, pointing devices, keyboards and/or speakers. In order to connect a USB device follow these easy steps: *(See Figure 2-6 on page 13 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

CAUTION

Due to the ongoing changes in USB technology and standards, not all USB devices and/or drivers are guaranteed to work.

INFRARED PORT

The Infrared IrDA 1.1 (4Mbps) port allows for wireless data transfer between your LifeBook and other IrDA-compatible devices, such as another computer or a printer, without the use of a cable. *(See Figure 2-4 on page 11 for location)*

It is important to keep in mind that while carrying out this form of communication, both devices must be placed so their infrared ports are directly facing each other without obstruction. The devices must also be

separated by at least 6" but no more than 36" for maximum performance.

The following conditions may interfere with infrared communications:

- A television, radio remote control unit, or a wireless headphone is being used nearby.
- Direct sunlight, fluorescent light, or incandescent light shines directly on the port.

CAUTION

Do not move either device while communication is active as it may interrupt data transmission.

CAUTION

Be careful not to scratch the infrared port lens. Scratches, dirt, or other surface marks can degrade operation.

POINT

With Windows 98 Second Edition, you can use the Infrared Recipient application for infrared file transfers. LapLink 2000 software can also be used for infrared file transfers.

With Windows 2000 Professional, file transfer is provided through Wireless Link in the Control Panel.

MICROPHONE JACK

The microphone jack allows you to connect an external mono microphone. Your microphone must be equipped with a 1/8"(3.5 mm) mono mini-plug in order to fit into the microphone jack of your LifeBook. In order to connect a microphone follow these easy steps: *(See Figure 2-3 on page 9 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

HEADPHONE JACK

The headphone jack allows you to connect headphones or powered external speakers to your LifeBook. Your headphones or speakers must be equipped with a 1/8" (3.5 mm) stereo mini-plug. In order to connect headphones or speakers follow these easy steps: *(See Figure 2-3 on page 9 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

POINT

If you plug headphones into the headphone jack, you will disable the built-in stereo speakers.

DOCKING PORT

The docking port is used for the connection of your LifeBook to an optional port replicator. In order to connect your LifeBook to one of these devices follow the instructions that came with your port replicator. *(See Figure 2-6 on page 13 for location)*

CAUTION

Some LifeBooks have a sliding panel that encloses the ports. The sliding panel can be damaged if it is left open while the LifeBook is moved.

EXTERNAL MONITOR PORT

The external monitor port allows you to connect an external monitor. In order to connect an external monitor follow these easy steps: *(See Figure 2-6 on page 13 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Tighten the two hold-down screws, located on each end of the connector.

POINT

Pressing the [Fn] + [F10] keys allows you to change your selection of where to send your display video. Each time you press the key combination, you will step to the next choice, starting with the built-in display panel only, moving to the external monitor only, finally moving to both the built-in display panel and an external monitor.

S-VIDEO PORT

The S-Video port allows you to connect and use directly any S-Video device, such as a VCR or television. The S-Video standard provides for a higher quality picture than NTSC or PAL. In order to connect an S-Video device, follow these steps: *(See Figure 2-6 on page 13 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

5 Troubleshooting

Troubleshooting

Your LifeBook is sturdy and subject to few problems in the field. However, you may encounter simple setup or operating problems that you can solve on the spot, or problems with peripheral devices that you can solve by replacing the device. The information in this section helps you isolate and resolve some of these straightforward problems and identify failures that require service.

IDENTIFYING THE PROBLEM

If you encounter a problem, go through the following procedure before pursuing complex troubleshooting.

1. Turn off your LifeBook.
2. Make sure the AC adapter is plugged into your LifeBook and to an active AC power source.
3. Make sure that any card installed in the PC Card slot is seated properly. You can also remove the card from the slot, thus eliminating it as a possible cause of failure.
4. Make sure that any devices connected to the external connectors are plugged in properly. You can also disconnect such devices, thus eliminating them as possible causes of failure.
5. Turn on your LifeBook. Make sure it has been off at least 10 seconds before you turn it on.
6. Go through the boot sequence.
7. If the problem has not been resolved, refer to the Troubleshooting Table, that follows, for more detailed troubleshooting information.

POINT

If you keep notes about what you have tried, your support representative may be able to help you more quickly by giving additional suggestions over the phone.

CAUTION

Do not return a failed LifeBook to your supplier until you have talked to a support representative.

8. If you have tried the solutions suggested in the Troubleshooting Table without success, contact your support representative:

   Toll free: 1-800-8FUJITSU (1-800-838-5487)
   Fax: 1-901-259-5700
   E-mail: 8fujitsu@fpc.fujitsu.com
   Web site: http://www.8fujitsu.com.

Before you place the call, you should have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- Product name
- Product configuration number
- Product serial number
- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Hardware configuration
- Type of device connected, if any

See the Configuration Label on the bottom of your LifeBook for configuration and serial numbers. *(See Figure 2-7 on page 14 for location)*

SPECIFIC PROBLEMS

Using PC-Doctor

PC-Doctor, by PC-Doctor.com, is a diagnostic program. If you are an experienced computer user you may find it useful, though, it is intended primarily to help your Fujitsu support representative better serve you. When you call for help, your support representative may ask you to setup your LifeBook for modem operation. You will be told what to do step by step, and then asked to hang up the phone and plug your phone line into the back of your LifeBook. Your support representative will then use the service computer to call your LifeBook and perform diagnostic tests to find the nature of you problem. Messages will be displayed on the screen explaining what is being done and any further instructions that you may need.

TROUBLESHOOTING TABLE

Using the Troubleshooting Table

When you have problems with your LifeBook, try to find the symptoms under the Problem column of the troubleshooting table for the feature giving you difficulty.

You will find a description of common causes for that symptom under the column Possible Cause and what, if anything, you can do to correct the condition under Possible Solutions. All possible causes or solutions may not apply to your LifeBook.

Problem	Page
Audio Problems	page 54
CD-ROM Drive Problems	page 54
Docking Problems	page 55
Floppy Disk Drive Problems	page 55
Hard Drive Problems	page 55
Keyboard or Mouse Problems	page 55
Memory Problems	page 56
Modem Problems	page 56
Parallel, Serial and USB Device Problems	page 56
PC Card Problems	page 57
Power Failures	page 57
Shutdown and Start-up Problems	page 59
Video Problems	page 60
Miscellaneous Problems	page 61

Problem	Possible Cause	Possible Solutions
Audio Problems		
There is no sound coming from the built-in speakers.	The volume is turned too low.	Adjust the volume control on your LifeBook.
	The software volume control is set too low.	Adjust the sound volume control settings in your software, operating system and applications.
	Headphones are plugged into your LifeBook.	Plugging in headphones disables the built-in speakers, remove the headphones.
	BIOS audio settings are incorrect.	Set the BIOS setup utility to the default values within the Multimedia Device Configuration menu. *(See BIOS Setup Utility on page 31 for more information)*
	Software driver is not configured correctly.	Refer to your application and operating system documentation for help.
	The system audio has been muted.	While holding down the [Fn] key on the keyboard, press the [F3] key.
CD-ROM Drive Problems		
LifeBook fails to recognize CDs.	CD is not pushed down onto raised center circle of the drive.	Open CD-ROM tray and re-install CD properly.
	CD-ROM tray is not latched shut.	Push on the front of the CD-ROM tray until it latches.
	Setup utility is set to something other than CD-ROM or Auto for the Secondary Master Controller.	Revise BIOS settings for the Secondary Master Controller. *(See BIOS Setup Utility on page 31 for more information)*
	Wrong drive designator was used for CD in the application.	Verify that the drive designator used by the application is the same as the one used by the operating system. When the operating system is booted from a CD, drive designations are automatically adjusted.
	Windows CD Auto Insert Notification function is disabled.	Start the CD from the desktop or application software or re-enable the Windows CD Auto Insert Notification function. *(See Auto Insert Notification Function on page 43 for more information)*
	CD is dirty or defective.	Wipe CD with a non-abrasive CD cleaning cloth and reinsert. If it still will not work try another CD in the drive.

Problem	Possible Cause	Possible Solutions
The CD-ROM Access indicator on the Status Indicator Panel blinks at regular intervals when no CD is in the tray.	The Windows CD Auto Insert Notification function is active and is checking to see if a CD is ready to run.	This is normal. However, you may disable this feature. *(See Auto Insert Notification Function on page 43 for more information)*
Port Replicator Problems		
LifeBook does not turn on while in Port Replicator.	Port Replicator is not plugged in.	Provide power to the Port Replicator.
	LifeBook is not properly seated in the Port Replicator.	Remove and re-seat your LifeBook in your Port Replicator.
Floppy Disk Drive Problems		
You cannot access your floppy disk.	You tried to write to a write protected floppy disk.	Eject the floppy disk and set it to write enable. *(See Floppy Disk Drive on page 41 for more information)*
	Floppy disk is not loaded correctly.	Eject floppy disk, check orientation and reinsert. *(See Floppy Disk Drive on page 41 for more information)*
	BIOS setup utility states `Diskette Controller: Disabled.`	Revise the setup utility Main menu settings to enable Diskette Controller. *(See BIOS Setup Utility on page 31 for more information)*
	The floppy disk drive may not be properly installed.	Remove and reinstall your floppy disk drive. *(See Flexible Bay Devices on page 35 for more information)*
	Security is set to protect access to floppy disk data.	Verify your password and security settings.
Hard Drive Problems		
You cannot access your hard drive.	The setup utility is incorrectly set for your internal (Primary Master) or optional second hard drive (Primary Slave).	Revise BIOS settings to set both Primary Master and Primary Slave correctly. *(See BIOS Setup Utility on page 31 for more information)*
	The wrong drive designator was used by an application when a bootable CD-ROM was used to start the LifeBook.	Verify drive designator used by application is in use by the operating system. When the operating system is booted from a CD, drive designations are automatically adjusted.
	Security is set so your operating system cannot be started without a password.	Verify your password and security settings.
Keyboard or Mouse Problems		
The built-in keyboard does not seem to work.	The LifeBook has gone into Suspend mode.	Push the Power and Suspend/Resume button.
	Your application has locked out your keyboard.	Try to use your intergrated pointing device to restart your system. If this fails, turn your LifeBook off using the power switch, wait 10 seconds or more, and then turn it back on.

Problem	Possible Cause	Possible Solutions
You have installed an external keyboard or mouse, and it does not seem to work.	Your external device is not properly installed.	Reinstall your device. *(See Device Ports on page 49 for more information)*
	Your operating system software is not setup with the correct software driver for that device.	Check your device and operating system documentation and activate the proper driver.
	Your mouse or keyboard is connected to the wrong PS/2 port on the Port Replicator.	Plug the mouse into the PS/2 Mouse port and the external keyboard or numeric key pad into the PS/2 Keyboard port. *(See Device Ports on page 49 for more information)*
You have connected an external keyboard or a mouse and it seems to be locking up the system.	Your operating system software is not setup with the correct software driver for that device.	Check your device and operating system documentation and activate the proper driver.
	Your system has crashed.	Try to restart your LifeBook. If that fails, turn off the power using the power switch, wait at least 10 seconds, and then power on.
Memory Problems		
Your Power On screen, or Main menu of the BIOS setup utility information, does not show the correct amount of installed memory.	Your memory upgrade module is not properly installed.	Remove and reinstall your memory upgrade module. *(See Memory Upgrade Module on page 47 for more information)*
	You have a memory failure.	Check for Power On Self Test (POST) messages. *(See Power On Self Test Messages on page 62 for more information)*
Modem Problems		
Messages about modem operation.	Messages about modem operation are generated by whichever modem application is in use.	See your application software documentation for additional information.
Parallel, Serial, and USB Device Problems		
You have installed a parallel port device, a serial port device or a USB device. Your LifeBook does not recognize the device, or the device does not seem to work properly.	The device is not properly installed.	Remove and reinstall the device. *(See Device Ports on page 49 for more information)*
	The device may have been installed while an application was running, so your LifeBook is not aware of its installation.	Close the application and restart your LifeBook.
	Your software may not have the correct software driver active.	See your software documentation and activate the correct driver.

Problem	Possible Cause	Possible Solutions
You have installed a parallel port device, a serial port device or a USB device. Your LifeBook does not recognize the device, or the device does not seem to work properly.	You may have the wrong I/O address selected for your device.	See your device documentation and software documentation to determine the required I/O address. Change the settings in the BIOS setup utility. *(See BIOS Setup Utility on page 31 for more information)*
	Your device and another device are assigned the same I/O address.	Check all I/O addresses located within the BIOS setup utility and any other installed hardware or software to make sure there are no duplications.
	Parallel port is set to output only.	Check parallel port setting in the BIOS and set to bi-directional or ECP.
PC Card Problems		
A card inserted in the PC Card slot does not work or is locking up the system.	The card is not properly installed.	Remove and reinstall the card. *(See PC Cards on page 45 for more information)*
	The card may have been installed while an application was running, so your LifeBook is not aware of its installation.	Close the application and restart your LifeBook.
	Your software may not have the correct software driver active.	See your software documentation and activate the correct driver.
	You may have the wrong I/O address selected for your PC Card device.	See your PC Card documentation to determine the required I/O address. Change the settings in the BIOS. *(See BIOS Setup Utility on page 31 for more information)*
	Your PC Card device and another device are assigned the same I/O address.	Check all I/O addresses located within the BIOS setup utility and any other installed hardware or software to make sure there are no duplications.
Power Failures		
You turn on your LifeBook and nothing seems to happen.	The installed battery is completely discharged,or there is no Power adapter installed.	Check the Status Indicator Panel to determine the presence and condition of the batteries. *(See Status Indicator Panel on page 15 for more information)* Install a charged battery or a Power adapter.
	The battery is installed but is faulty.	Use the Status Indicator panel to verify the presence and condition of the batteries. *(See Status Indicator Panel on page 15 for more information)* If a battery is indicating a short, remove that battery and operate from another power source or replace that battery.
	The battery is low.	Check the Status Indicator Panel to determine the presence and condition of the battery. *(See Status Indicator Panel on page 15 for more information)* Use a Power adapter to operate until a battery is charged or install a charged battery.
	The power adapter is not plugged in properly.	Verify that your adapter is connected correctly. *(See Power Sources on page 29 for more information)*

Problem	Possible Cause	Possible Solutions
You turn on your LifeBook and nothing seems to happen.	The Power adapter has no power from the AC outlet.	Move the AC cord to a different outlet, check for a line switch or tripped circuit breaker for the AC outlet.
	The Power adapter is faulty.	Try a different Power adapter or install a charged optional second battery.
Your LifeBook turns off all by itself.	The power management parameters are set for auto timeouts which are too short for your operating needs.	Press any button or key on the keyboard, or move the mouse to restore operation. If that fails, push the Power and Suspend/Resume button. Check your power management settings, or close your applications and go to the Power Savings menu of the setup utility to adjust the timeout values to better suit your operation needs.
	You are operating on battery power only and have ignored a low battery alarm until the batteries are all at the dead battery state and your machine has gone into Dead Battery Suspend mode.	Install a power adapter and then push the Power and Suspend/Resume button. *(See Power Sources on page 29 for more information)*
	You have a battery failure.	Verify the condition of the batteries using the Status Indicator panel, and replace or remove any batteries that are shorted. *(See Status Indicator Panel on page 15 for more information)*
	Your power adapter has failed or lost its power source.	Make sure the adapter is plugged in and the outlet has power.
Your LifeBook will not work on battery alone.	The installed batteries are dead.	Replace the battery with a charged one or install a Power adapter.
	No batteries are installed.	Install a charged battery.
	The batteries are improperly installed.	Verify that the batteries are properly connected by re-installing them.
	Your installed batteries are faulty.	Verify the condition of the batteries using the Status Indicator panel and replace or remove any batteries that are shorted. *(See Status Indicator Panel on page 15 for more information)*
The batteries seem to discharge too quickly.	You are running an application that uses a great deal of power due to frequent hard drive access or CD-ROM access, use of a modem card or a LAN PC card.	Use both the primary battery and an optional second battery and/or use a power adapter for this application when at all possible.
	The power savings features may be disabled.	Check the power management and/or setup utility settings in the Power Savings menu and adjust according to your operating needs.
	The brightness is turned all the way up.	Turn down the brightness adjustment. The higher the brightness the more power your display uses.

Problem	Possible Cause	Possible Solutions
The batteries seem to discharge too quickly.	The batteries are very old.	Replace the batteries.
	The batteries have been exposed to high temperatures.	Replace the batteries.
	The batteries are too hot or too cold.	Restore the LifeBook to normal operating temperature. The Charging icon on the Status Indicator panel will flash when the battery is outside its operating range.
Shutdown and Startup Problems		
The Power and Suspend/ Resume button does not work.	The Power and Suspend/ Resume button is disabled from the Advanced submenu of the Power menu of the setup utility.	Enable the button from the setup utility.
	You did not hold the button in long enough.	Hold the button longer. This may need to be a few seconds if your application is preventing the CPU from checking for button pushes.
	There may be a conflict with the application software.	Close all applications and try the button again.
The system powers up, and displays power on information, but fails to load the operating system.	The boot sequence settings of the setup utility are not compatible with your configuration.	Set the operating source by pressing the [ESC] key while the Fujitsu logo is on screen or use the [F2] key and enter the setup utility and adjust the source settings from the Boot menu. *(See BIOS Setup Utility on page 31 for more information)*
	You have a secured system requiring a password to load your operating system.	Make sure you have the right password. Enter the setup utility and verify the Security settings and modify them accordingly. *(See BIOS Setup Utility on page 31 for more information)*
	Internal hard drive was not detected.	Use the BIOS setup utility or Primary Master submenu, located within the Main menu, to try to auto detect the internal hard drive.
An error message is displayed on the screen during the LifeBook (boot) sequence.	Power On Self Test (POST) has detected a problem.	See the POST messages to determine the meaning and severity of the problem. Not all messages are errors; some are simply status indicators. *(See Power On Self Test Messages on page 62 for more information)*
Your LifeBook appears to change setup parameters when you start it.	BIOS setup changes were not saved when you made them and exited the BIOS setup utility returning it to previous settings.	Make sure you select Save Changes And Exit when exiting the BIOS setup utility.
	The BIOS CMOS hold-up battery has failed.	Contact your support representative for repairs. This is not a user serviceable part but has a normal life of 3 to 5 years.

Problem	Possible Cause	Possible Solutions
Video Problems		
The built-in display is blank when you turn on your LifeBook.	Something is pushing on the Closed Cover switch.	Clear the Closed Cover switch. *(See Figure 2-3 on page 9 for location)*
	The LifeBook is set for an external monitor only.	Pressing [F10] while holding down the [Fn] key allows you to change your selection of where to send your display video. Each time you press the combination of keys you will step to the next choice. The choices, in order are: built-in display only, external monitor only, both built-in display and external monitor.
	The angle of the display and the brightness settings are not adequate for your lighting conditions.	Move the display and the brightness control until you have adequate visibility.
	The power management time-outs may be set for very short intervals and you failed to notice the display come on and go off again.	Press any button or key on the keyboard, or move the mouse to restore operation. If that fails, push the Power and Suspend/Resume button. (The display may be shut off by Standy mode, Auto Suspend or Video Timeout.)
The LifeBook turned on with a series of beeps and your built-in display is blank.	Power On Self Test (POST) has detected a failure which does not allow the display to operate.	Contact your support representative.
The display goes blank by itself after you have been using it.	The LifeBook has gone into Video timeout, Standby mode, Suspend mode or Save-to-Disk mode because you have not used it for a period of time.	Press any button or key on the keyboard, or move the mouse to restore operation. If that fails, push the Power and Suspend/Resume button. Check your power management settings, or close your applications and go to the Power Savings menu of the setup utility to adjust the timeout values to better suit your operation needs. *(See BIOS Setup Utility on page 31 for more information)*
	Something is pushing on the Closed Cover switch.	Check the Closed Cover switch. *(See Figure 2-3 on page 9 for location)*
	The power management time-outs may be set for very short intervals and you failed to notice the display come on and go off again.	Press any button or key on the keyboard, or move the mouse to restore operation. If that fails, push the Power and Suspend/Resume button. (The display may be shut off by Standby Mode, Auto Suspend or Video Timeout.)
The Built-in Display does not close.	A foreign object, such as a paper clip, is stuck between the display and the keyboard.	Remove all foreign objects from the keyboard.
The Built-in Display has bright or dark spots.	If the spots are very tiny and few in number, this is normal for a large LCD display.	This is normal; do nothing.
	If the spots are numerous or large enough to interfere with your operation needs.	Display is faulty; contact your support representative.

Problem	Possible Cause	Possible Solutions
The application display uses only a portion of your screen and is surrounded by a dark frame.	You are running an application that does not support 800 x 600 pixel resolution display and display compression is enabled.	Display compression gives a clearer but smaller display for applications that do not support 800 x 600 pixel resolution. You can fill the screen but have less resolution by changing your display compression setting, (See the Video Features submenu, located within the Advanced menu of the BIOS.) *(See BIOS Setup Utility on page 31 for more information)*
You have connected an external monitor and it does not display any information.	Your BIOS setup is not set to enable your external monitor.	Try toggling the video destination by pressing [Fn] and [F10] together, or check your BIOS setup and enable your external monitor. (See the Video Features submenu, located within the Advanced Menu of the BIOS.) *(See BIOS Setup Utility on page 31 for more information)*
	Your external monitor is not properly installed.	Reinstall your device. *(See External Monitor Port on page 50 for more information)*
	Your operating system software is not setup with the correct software driver for that device.	Check your device and operating system documentation and activate the proper driver.
	Your external monitor is not compatible with your LifeBook.	See your monitor documentation and the External Monitor Support portions of the Specifications section on page page 75.
Miscellaneous Problems		
An error message is displayed on the screen during the operation of an application.	Application software often has its own set of error message displays.	See your application manual and help displays screens for more information. Not all messages are errors some may simply be status.

POWER ON SELF TEST MESSAGES

The following is an alphabetic list of error-and-status messages that Phoenix BIOS and/or your operating system can generate and an explanation of each message. Error messages are marked with an *. The most common errors are marked with a #. If an error message is displayed that is not in this list, write it down and check your operating system documentation both on screen and in the manual. If you can find no reference to the message and its meaning is not clear, contact your support representative for assistance.

nnnn Cache SRAM Passed

Where nnnn is the amount of system cache in kilobytes successfully tested by the Power On Self Test. (This can only appear if you have an SRAM PC Card installed.)

***Diskette drive A error or Diskette drive B error**

Drive A: or B: is present but fails the BIOS Power On Self Test diskette tests. Check to see that the drive is defined with the proper diskette type in the Setup Utility, *(See BIOS Setup Utility on page 31 for more information)* and that the diskette drive is installed correctly. If the disk drive is properly defined and installed, avoid using it and contact your support representative.

***Extended RAM Failed at offset: nnnn**

Extended memory not working or not configured properly. If you have an installed memory upgrade module, verify that the module is properly installed. If it is properly installed, you may want to check your Windows Setup to be sure it is not using unavailable memory until you can contact your support representative.

nnnn Extended RAM Passed

Where nnnn is the amount of memory in kilobytes successfully tested.

***Failing Bits: nnnn The hex number nnnn**

This is a map of the bits at the memory address (in System, Extended, or Shadow memory) which failed the memory test. Each 1 (one) in the map indicates a failed bit. This is a serious fault that may cause you to lose data if you continue. Contact your support representative.

***Fixed Disk x Failure or Fixed Disk Controller Failure (where x = 1-4)**

The fixed disk is not working or not configured properly. This may mean that the hard drive type identified in your setup utility does not agree with the type detected by the Power On Self Test. Run the setup utility to check for the hard drive type settings and correct them if necessary. If the settings are OK and the message appears when you restart the system, there may be a serious fault which might cause you to lose data if you continue. Contact your support representative.

***Incorrect Drive A type – run SETUP**

Type of floppy drive A: not correctly identified in Setup. This means that the floppy disk drive type identified in your setup utility does not agree with the type detected by the Power On Self Test. Run the setup utility to correct the inconsistency.

***Incorrect Drive B type – run SETUP**

Type of floppy drive B: not correctly identified in Setup. This means that the floppy disk drive type identified in your setup utility does not agree with the type detected by the Power On Self Test. Run the setup utility to correct the inconsistency.

***Invalid NVRAM media type**

Problem with NVRAM access. In the unlikely case that you see this message you may have some display problems. You can continue operating but should contact your support representative for more information.

***Keyboard controller error**

The keyboard controller test failed. You may have to replace your keyboard or keyboard controller but may be able to use an external keyboard until then. Contact your support representative.

***Keyboard error**

Keyboard not working. You may have to replace your keyboard or keyboard controller but may be able to use an external keyboard until then. Contact your support representative.

***Keyboard error nn**

BIOS discovered a stuck key and displays the scan code for the stuck key. You may have to replace your keyboard but may be able to use an external keyboard until then. Contact your support representative.

***Monitor type does not match CMOS – Run SETUP**

Monitor type not correctly identified in Setup. This error probably means your BIOS is corrupted, run the setup utility and set all settings to the default conditions. If you still get this error, contact your support representative.

#*Operating system not found

Operating system cannot be located on either drive A: or drive C:. Enter the setup utility and see if both the fixed disk, and drive A: are properly identified and that the boot sequence is set correctly. Unless you have changed your installation greatly, the operating system should be on drive C:. If the setup utility is correctly set, your hard

drive may be corrupted and your system may have to be reinstalled from your back up media.

***Parity Check 1 nnnn**
Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????. This is a potentially data destroying failure. Contact your support representative.

***Parity Check 2 nnnn**
Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????. This is a potentially data destroying failure. Contact your support representative.

#*Press <F1> to resume, <F2> to SETUP
Displayed after any recoverable error message. Press the [F1] key to continue the boot process or the [F2] key to enter Setup and change any settings.

#*Previous boot incomplete – Default configuration used
Previous Power On Self Test did not complete successfully. The Power On Self Test will load default values and offer to run Setup. If the previous failure was caused by incorrect values and they are not corrected, the next boot will likely fail also. If using the default settings does not allow you to complete a successful boot sequence, you should turn off the power with the Power Switch and contact your support representative.

***Real time clock error**
Real-time clock fails BIOS test. May require board repair. Contact your support representative.

***Shadow RAM Failed at offset: nnnn**
Shadow RAM failed at offset nnnn of the 64k block at which the error was detected. You are risking data corruption if you continue. Contact your support representative.

nnnn Shadow RAM Passed
Where nnnn is the amount of shadow RAM in kilobytes successfully tested.

***System battery is dead – Replace and run SETUP**
The BIOS CMOS RAM memory hold up battery is dead. This is part of your BIOS and is a board mounted battery which requires a support representative to change. You can continue operating but you will have to use setup utility default values or reconfigure your setup utility every time you turn off your LifeBook. This battery has an expected life of 2 to 3 years.

System BIOS shadowed
System BIOS copied to shadow RAM.

***System CMOS checksum bad – run SETUP**
BIOS CMOS RAM has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in BIOS memory. Run Setup and reconfigure the system.

***System RAM Failed at offset: nnnn**
System memory failed at offset nnnn of in the 64k block at which the error was detected. This means that there is a fault in your built-in memory. If you continue to operate, you risk corrupting your data. Contact your support representative for repairs.

nnnn System RAM Passed
Where nnnn is the amount of system memory in kilobytes successfully tested.

***System timer error**
The timer test failed. The main clock that operates the computer is faulty. Requires repair of system board. Contact your support representative for repairs.

UMB upper limit segment address: nnnn
Displays the address of the upper limit of Upper Memory Blocks, indicating released segments of the BIOS memory which may be reclaimed by a virtual memory manager.

Video BIOS shadowed
Video BIOS successfully copied to shadow RAM.

EMERGENCY CD-ROM TRAY RELEASE

If for some reason the eject button fails, you can open the CD-ROM tray with a paper clip or similar tool inserted into the eject hole in the far right side of the front of the tray. Straighten one side of a paper clip and push it gently into the hole. The tray will pop out a short distance.

MODEM RESULT CODES

The operating system and application software that is factory installed detects the modem characteristics and provides the necessary command strings to operate the modem. The internal modem operation is controlled by generic AT commands from the operating system and application software. The standard long form result codes may, in some cases, be displayed on your screen to keep you informed of the actions of your modem. The operating system and application software may suppress display of the result codes.

Examples of result codes are:

- OK
- NO CARRIER
- NO DIALTONE
- CONNECT 53000 (Connection complete at 53,000 bps.)
- ERROR
- FAX
- RING (This means an incoming call.)
- BUSY
- NO ANSWER

When using the internal modem with applications that are not factory installed refer to the application documentation.

RECOVERY CD

Included with your LifeBook are the Emergency Recovery CD and Drivers and Application Restore CD.

The Emergency Recovery CD contains the following:

- A backup copy of the software originally installed on your Fujitsu E Series LifeBook.

The Drivers and Application Restore CD contains the following:

- Installation files for pre-installed software
- Sets of device drivers and Fujitsu Applications (in specific directories) that are unique to your LifeBook configuration.
- Read-me files that provide information and installation instructions.

POINT

If you have access to the internet, visit the Fujitsu PC Corporation Support Web site at http://www.8fujitsu.com to check for the most current information, drives and hints on how to perform recovery and system updates.

Restoring Your Pre-installed Software from CD-ROM

The Emergency Recovery CD enables restoration of your LifeBook disk drive contents as they were originally shipped from the factory. Most often this is necessary if files or software programs (only those files/programs that came pre-installed) become corrupt or accidentally erased.

You have two options available when performing recovery:

1. Recover Hard Drive without Format. This choice replaces all the original factory installed files and program structures without eliminating your data files. You will have to reinstall any software that was not included with the computer when you bought it, however your data will be intact as long as the installation of the additional programs is performed in the same manner.
2. Format and Recover Hard Drive. This choice removes all the information on the hard disk. If you choose this option, you will lose any software you have installed and any other files you created since you setup your computer. You will have to re-install any software that was not included with the computer when you bought it.

POINT

It is recommended that you back-up all data files prior to performing either of the recovery options.

CAUTION

User data and user installed software CAN NOT be recovered from the Emergency Recovery CD.

To Run the Emergency Recovery Program

To use this portion of the CD-ROM, your LifeBook must Boot up (upon power up or full system reset/restart) from the CD-ROM drive.

1. Insert the Emergency Recovery CD in the CD-ROM drive.
2. If your LifeBook is running when you insert the CD, exit your operating system and power down the LifeBook.
3. Start (power up) your LifeBook.
4. At this point, you must either change your BIOS setup configuration through the [F2] key to have the computer boot from the CD-ROM "first" (if you have not previously done so), or you can use the [ESC] key during this boot-up sequence and select the CD-ROM from the menu that will appear. *(See BIOS Setup Utility on page 31 for more information)*
5. If correctly configured to boot from the Recovery CD-ROM, you will notice your system running a full virus scan of the hard drive and then reach the Emergency Recovery Welcome screen. If this is not what is displayed, check to see that the Recovery CD is installed in the CD-ROM drive and repeat the previous steps, starting with step 2. If you received a message "This program may not be used on your computer" you are using the wrong Recovery CD for the model of LifeBook. Contact Fujitsu PC Service and Support to obtain the correct CD.
6. Read the information displayed on the Welcome screen, then click OK.

7. Select one of the two icons displayed in the Emergency Recovery menu and follow the instructions.
8. When recovery is complete, remove the Recovery CD, replace it in its sleeve and store it in a safe location.
9. Restart your LifeBook.
10. Reset your boot device priority in the BIOS setup as desired.

Your LifeBook now has all of the software installed that was included when you received it from the factory. You must now load any programs which you purchased and installed after you received your LifeBook. If you chose the Format and Recover Hard Drive option, you should now restore your data files. If you performed the Recover Hard Drive without Format, your data files will still exist (within their original directory structures).

POINT

Once the process is complete and you restart your LifeBook, you will be required to perform all the setup steps as when the computer was first purchased. *(See Booting the System with Windows 98 Second Edition on page 32 for more information)*

POINT

As long as there is no bootable disk in the CD-ROM drive or the floppy disk drive, your LifeBook will boot from the hard drive regardless of the BIOS Boot Device Priority setting.

Drivers CD and Applications Restore CD

The Drivers CD and Application CD can be used to selectively re-install drivers and/or applications that may have been un-installed or corrupted. Please refer to installation instructions located in the Drivers CD and Applications Restore CD. You can also consult our Web site at www.8fujitsu.com.

POINT

Look for and open files with the extensions.DOC and .TXT.

6
Care and Maintenance

Care and Maintenance

If you use your LifeBook carefully, you will increase its life and reliability. This section provides some tips for looking after the LifeBook and its devices.

CAUTION

Electrical equipment may be hazardous if misused. Operations of this product or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical products and do not permit them to handle any cables.

LIFEBOOK

Caring for your LifeBook

- Your LifeBook is a durable but sensitive electronic device. Treat it with respect and care.
- Make a habit of transporting it in a suitable carrying case.
- Do not attempt to service the computer yourself. Always follow installation instructions closely.
- Keep it away from food and beverages.
- If you accidentally spill liquid on your LifeBook:
  1. Turn it off.
  2. Position it so that the liquid can run out.
  3. Let it dry out for 24 hours, or longer if needed.
  4. If your LifeBook will not boot after it has dried out, call your support representative.
- Do not use your LifeBook in a wet environment (near a bathtub, swimming pool).
- Always use the AC adapter and batteries that are approved for your LifeBook.
- Avoid exposure to sand, dust and other environmental hazards.
- Do not expose your LifeBook to direct sunlight for long periods of time as temperatures above 140° F (60° C) may damage your LifeBook.
- Keep the covers closed on the connectors and slots when they are not in use.
- Do not put heavy or sharp objects on the computer.
- If you are carrying your LifeBook in a briefcase, or any other carrying case, make sure that there are no objects in the case pressing on the lid.
- Do not drop your LifeBook.
- Do not touch the screen with any sharp objects.

Cleaning your LifeBook

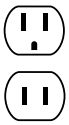
- Always disconnect the power plug. (Pull the plug, not the cord.)
- Clean your LifeBook with a damp, lint-free cloth. Do not use abrasives or solvents.
- Use a soft cloth to remove dust from the screen. Never use glass cleaners.

Storing your LifeBook

- If storing your LifeBook for a month or longer, turn your LifeBook off and remove all Lithium ion batteries.
- Store your LifeBook and batteries separately. If you store your LifeBook with a battery installed, the battery will discharge, and battery life will be reduced. In addition, a faulty battery might damage your LifeBook.
- Store your LifeBook in a cool, dry location. Temperatures should remain between -25°C (13°F) and 60°C (140°F).

Traveling with your LifeBook

- Do not transport your LifeBook while it is turned on.
- Do not check your LifeBook as baggage. Carry it with you.
- Always bring your System Recovery CD that came with your LifeBook when you travel. If you experience system software problems while traveling, you may need it to correct any problems.
- Never put you LifeBook through a metal detector. Have your LifeBook hand-inspected by security personnel. You can however, put your LifeBook through a properly tuned X-ray machine. To avoid problems, place your LifeBook close to the entrance of the machine and remove it as soon as possible or have your LifeBook hand-inspected by security personnel. Security officials may require you to turn your LifeBook On. Make sure you have a charged battery on hand.
- When traveling with the hard drive removed, wrap the drive in a non-conducting materials (cloth or paper). If you have the drive checked by hand, be ready to install the drive if needed. Never put your hard drive through a metal detector. Have your hard drive hand-inspected by security personnel. You can however, put your hard drive through a properly tuned X-ray machine.
- Take the necessary plug adapters if you're traveling overseas. Check the following diagram to determine which plug adapter you'll need or ask your travel agent.

Outlet Type	Location
	United States, Canada, parts of Latin America, Japan, Korea, the Philippines, Taiwan
	Russia and the Commonwealth of Independent States (CIS), most of Europe, parts of Latin America, the Middle East, parts of Africa, Hong Kong, India, most of South Asia
	Mexico, United Kingdom, Ireland, Malaysia, Singapore, parts of Africa
	China, Australia, New Zealand

BATTERIES

Caring for your Batteries

- Always handle batteries carefully.
- Do not short-circuit the battery terminals (that is, do not touch both terminals with a metal object). Do not carry lose batteries in a pocket or purse where they may mix with coins, keys, or other metal objects. Doing so may cause an explosion or fire.
- Do not drop, puncture, disassemble, mutilate or incinerate the battery.
- Recharge batteries only as described in this manual and only in ventilated areas.
- Do not leave batteries in hot locations for more than a day or two. Intense heat can shorten battery life.
- Do not leave a battery in storage for longer than 6 months without recharging it.

Increasing Battery Life

- Power your LifeBook through the AC adapter whenever possible.
- If your LifeBook is running on battery power all day, connect it to the AC adapter overnight to recharge the battery.
- Keep brightness to the lowest level comfortable.
- Set the power management for maximum battery life.
- Put your LifeBook in Suspend mode when it is turned on and you are not actually using it.
- Limit your CD-ROM access.
- Disable the Windows CD Auto Insert function.
- Always use fully charged batteries.
- Eject PCMCIA cards when not in use.

FLOPPY DISKS AND DRIVES

Caring for your Floppy Disks

- Avoid using the floppy disks in damp and dusty locations.
- Never store a floppy disk near a magnet or magnetic field.
- Do not use a pencil or an eraser on a disk or disk label.
- Avoid storing the floppy disks in extremely hot or cold locations, or in locations subject to severe temperature changes. Store at temperatures between 50º F (10ºC) and 125ºF (52ºC).
- Do not touch the exposed part of the disk behind the metal shutter.

Caring for your Floppy Disk Drive

- To clean, wipe the floppy disk drive clean with a dry soft cloth, or with a soft cloth dampened with water or a solution of neutral detergent. Never use benzene, paint thinner or other volatile material.
- Avoid storing the floppy disk drive in extremely hot or cold locations, or in locations subject to severe temperature changes. Store at temperatures between 50º F (10ºC) and 125ºF (52ºC).
- Keep the floppy disk drive out of direct sunlight and away from heating equipment.
- Avoid storing the floppy disk drive in locations subject to shock and vibration.
- Never use the floppy disk drive with any liquid, metal, or other foreign matter inside the floppy disk drive or disk.
- Never disassemble or dismantle your floppy disk drive.

CDs

Caring for your CDs

CDs are precision devices and will function reliably if given reasonable care.

- Always store your CDs in its case when it is not in use.
- Always handle CDs by the edges and avoid touching the surface.
- Avoid storing any CDs in extreme temperatures.
- Do not bend CDs or set heavy objects on them.
- Do not spill liquids on CDs.
- Do not scratch CDs.

- Do not put a label on CDs.
- Do not get dust on CDs.
- Never write on the label surface with a ballpoint pen or pencil. Always use a felt pen.
- If a CD is subjected to a sudden change in temperature, cold to warm, condensation may form on the surface. Wipe the moisture off with a clean, soft, lint free cloth and let it dry at room temperature. DO NOT use a hair dryer or heater to dry CDs.
- If a CD is dirty, use only a CD cleaner or wipe it with a clean, soft, lint free cloth starting from the inner edge and wiping to the outer edge.

Caring for your CD-ROM Drive

Your CD-ROM drive is durable but you must treat it with care. Please pay attention to the following points:

- The drive rotates the compact disk at a very high speed. Do not carry it around or subject it to shock or vibration with the power on.
- Avoid using or storing the drive where it will be exposed to extreme temperatures.
- Avoid using or storing the drive where it is damp or dusty.
- Avoid using or storing the drive near magnets or devices that generate strong magnetic fields.
- Avoid using or storing the drive where it will be subjected to shock or vibration.
- Do not disassemble or dismantle the CD-ROM drive.

PC CARDS

Caring for your PC Cards

PC Cards are durable, but you must treat them with care. The documentation supplied with your PC Card will provide specific information, but you should pay attention to the following points:

- To keep out dust and dirt, store PC Cards in their protective sleeves when they are not installed in your LifeBook.
- Avoid prolonged exposure to direct sunlight or excessive heat.
- Keep the cards dry.
- Do not flex or bend the cards, and do not place heavy objects on top of them.
- Do not force cards into the slot.
- Avoid dropping cards, or subjecting them to excessive vibration.

7
Specifications

Specifications

This section provides the hardware and environmental specifications for your LifeBook. Specifications of particular configurations will vary.

CONFIGURATION LABEL

Your LifeBook contains a configuration label located on the bottom of your LifeBook. *(See Figure 2-7 on page 14 for location)* This label contains specific information regarding the options you've chosen for your LifeBook. Following is an example label and information on how to read your own configuration label.

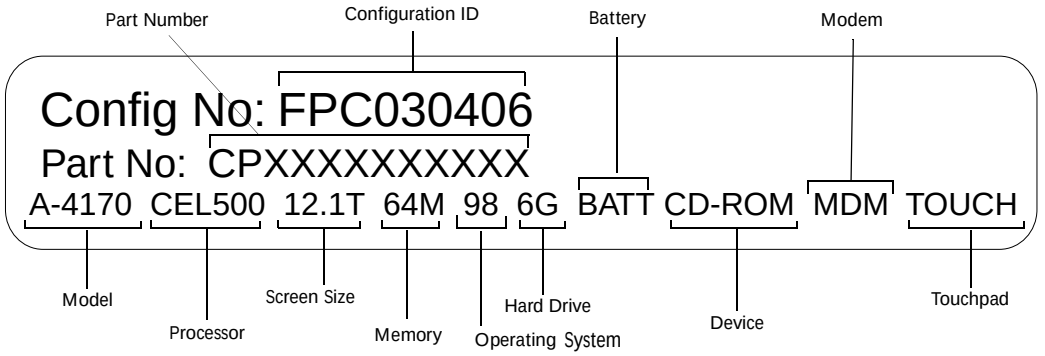


Figure 7-1 Configuration Label

Features	A-4170
Processor	500 MHz Intel Celeron microprocessor
Display	12.1" SVGA TFT
Memory	64MB
Hard Disk	6GB

MICROPROCESSOR

Intel Celeron Microprocessor

MEMORY

System Memory
64MB SDRAM

Cache Memory
128KB On-die L2

Expansion Memory Options
Extend system memory up to 192MB

BIOS Memory
128 Bytes CMOS-RAM with back-up battery

VIDEO

Built-in color flat-panel TFT active matrix LCD display with simultaneous display capability.

Video Color and Resolution
12.1" SVGA TFT

- Internal: 800 x 600 pixel resolution, 256K colors
- External: 1600 x 1200 pixel resolution, 64k colors
- Simultaneous Video

Video RAM
4MB Embedded SDRAM

Video
Zoomed Video support via bottom PC Card Slot

AUDIO

- Crystal SoundFusion™ CS4281 WDM Audio Chip
- Spatializer 3D-Stereo multiple speaker effect support
- Stereo headphone jack, 1 Vrms, or less, minimum impedance 32 Ohms
- Mono microphone jack, 125 mVp-p or less, minimum impedance 10K Ohms
- Two built-in speakers, 28 mm diameter (Stereo)
- One built-in monaural microphone

FEATURES

Pointing Device
Touchpad pointing device

LifeBook Application Panel
One Touch Panel: 4-button application launcher for Internet, e-mail and software while LifeBook is in On state.

Communications
Modem: Internal V.90 standard 56K* fax/modem (ITU V.90, 56K data, 14.4K fax)

** Actual data transfer rate over U.S. telephone lines varies and is less than 56Kbps due to the current FCC regulations and line conditions. The internal modem on all LifeBooks from Fujitsu PC Corporation is only qualified for use with telephone systems inside the United States and Canada and may not operate in other countries.*

Theft Prevention Lock
Lock slot for use with physical restraining security systems. The Kensington lock system is recommended.

PRE-INSTALLED SOFTWARE

Windows 98 Second Edition Models
- Microsoft Windows 98 Second Edition
- Microsoft Internet Explorer
- PMSet 98 by Fujitsu Limited
- PC-Doctor by PC-Doctor.com
- ActiveShield by McAfee.com, Inc.
- Clinic (online coupon) by McAfee.com, Inc.
- LapLink 2000 by LapLink.com, Inc.
- Adobe Acrobat Reader by Adobe Systems, Inc.
- Netscape Communicator by Netscape
- LifeBook Application Panel

Windows 2000 Professional Models
- Microsoft 2000 Professional
- Microsoft Internet Explorer
- PC-Doctor by PC-Doctor.com
- ActiveShield by McAfee.com, Inc.
- Clinic (online coupon) by McAfee.com, Inc.
- Adobe Acrobat Reader by Adobe Systems, Inc.
- Netscape Communicator
- LifeBook Application Panel

DEVICE PORTS

- Combination PC Card slot for one Type III/two Type I/II cards: PCMCIA Standard 2.1 with CardBus support; Zoomed Video support via Slot 1
- One 6-pin mini DIN PS/2 compatible connector, for external keyboard, external mouse or external numeric keypad
- One 25-pin D-SUB two-way Centronics type connector for parallel input/output devices; Bi-directional, output only or ECP
- One 240-pin connector for docking devices.
- One 15-pin D-SUB connector for VGA external monitor (see Display specifications)
- One 9-pin D-SUB connector for RS-232C serial input/output devices
- One connector for USB (Universal Serial Bus) input/output devices
- One modular modem (RJ-11) connector
- One stereo headphone jack (See Audio specifications)
- One mono microphone jack (See Audio specifications)

KEYBOARD

Built-in keyboard with all functions of 87 key PS/2 compatible keyboards.
- Total number of keys: 87
- Function keys: 12, F1 through F12
- Feature extension key: Fn
- Windows keys: 3, two Start keys and an application key
- Key pitch: 19 mm
- Key stroke: 3 mm
- Built-in Touchpad pointing device with left and right buttons

External Keyboard Support
PS/2 compatible

External Numeric Keypad Support
PS/2 compatible

External Mouse Support
PS/2 compatible

Management Standard
DMI 2.0-ready, WfM 1.1a-enabled

POWER

Batteries
Main 8-cell Lithium ion battery, rechargeable, 10.8V, 3600 mAh

AC Adapter
Autosensing 100-240V AC, 53W, supplying 19V DC to the LifeBook. Fujitsu model includes an AC cable.

Power Management
Conforms to ACPI (Advanced Configuration & Power Interface)

Electrostatic Discharge (ESD)
9 kV

DIMENSIONS AND WEIGHT

Overall Dimensions
12.13" x 10.78" x 1.56" (308 mm x 273.5 mm x 39.5 mm)

Weights
7.7 lbs (3.5Kg) with Weight Saver

ENVIRONMENTAL REQUIREMENTS

Temperature
Operating: 5° to 35° C (41° to 95° F)
Non-operating: –15° to 60° C (5° to 140° F)

Humidity
Operating: 20% to 85%, relative, non-condensing
Non-operating: 8% to 85%, relative, non-condensing

Altitude
Operating: 10,000 feet (3,048 m) maximum



8 Glossary

Glossary

AC Adapter
A device which converts the AC voltage from a wall outlet to the DC voltage needed to power your LifeBook.

ACPI
Advanced Configuration & Power Interface. A power management tool, which is part of the Windows 98 Second Edition operating system, that enables the operating system to control the amount of power given to each device attached to the computer. With ACPI, the operating system can turn off peripheral devices, such as the CD-ROM player, when it is not in use.

Active-Matrix Display
A type of technology for making flat-panel displays which has a transistor or similar device for every pixel on the screen.

APM
Advanced Power Management.

BIOS
Basic Input-Output System. A program and set of default parameters stored in ROM which tests and operates your LifeBook when you turn it on until it loads your installed operating system from disk. Information from the BIOS is transferred to the installed operating system to provide it with information on the configuration and status of the hardware.

Bit
An abbreviation for binary digit. A single piece of information which is either a one (1) or a zero (0).

bps
An abbreviation for bits per second. Used to describe data transfer rates.

Boot
To start-up a computer and load its operating system from disk, ROM or other storage media into RAM.

Bus
An electrical circuit which passes data between the CPU and the sub-assemblies inside your LifeBook.

Byte
8 bits of parallel binary information.

Cache Memory
A block of memory built into the microprocessor which is much faster to access than your system RAM and used in specially structured ways to make your overall data handling time faster.

CardBus
A faster, 32-bit version of the PC Card interface which offers performance similar to the 32-bit PCI architecture.

CD-ROM
Compact disc read only memory. This is a form of digital data storage which is read optically with a laser rather than a magnetic head. A typical CD-ROM can contain about 600MB of data and is not subject to heads crashing into the surface and destroying the data when there is a failure nor to wear from reading.

CMOS RAM
Complementary metal oxide semiconductor random access memory. This is a technology for manufacturing random access memory which requires very low levels of power to operate.

COMM Port
Abbreviation for communication port. This is your serial interface connection.

Command
An instruction which you give your operating system. Example: run a particular application or format a floppy disk.

Configuration
The combination of hardware and software that makes up your system and how it is allocated for use.

CRT
Cathode Ray Tube. A display device which uses a beam of electronic particles striking a luminescent screen. It produces a visual image by varying the position and intensity of the beam.

Data
The information a system stores and processes.

DC
Direct current. A voltage or current that does not fluctuate periodically with time.

Default Value
A preprogrammed value to be used if you fail to set your own.

DIMM
Dual-in-line memory module.

Disk
A spinning platter of magnetic data storage media. If the platter is very stiff it is a hard drive, if it is highly flexible it is a floppy disk, if it is a floppy disk in a hard housing with a shutter it is commonly called a diskette.

Disk Drive
The hardware which spins the disk and has the heads and control circuitry for reading and writing the data on the disk.

Diskette
A floppy disk in a hard housing with a shutter.

DMA
Direct Memory Access. Special circuitry for memory to memory transfers of data which do not require CPU action.

DMI
Desktop Management Interface. A standard that provides PC management applications with a common method of locally or remotely querying and configuring PC computer systems, hardware and software components, and peripherals.

DOS
Disk Operating System (MS-DOS is a Microsoft Disk Operating System).

Driver
A computer program which converts application and operating system commands to external devices into the exact form required by a specific brand and model of device in order to produce the desired results from that particular equipment.

ECP
Extended Capability Port. A set of standards for high speed data communication and interconnection between electronic devices.

ESD
Electrostatic Discharge. The sudden discharge of electricity from a static charge which has built-up slowly. Example: the shock you get from a doorknob on a dry day or the sparks you get from brushing hair on a dry day.

Extended Memory
All memory more than the 640KB recognized by MS-DOS as system memory.

FCC
Federal Communication Commission.

Floppy Disk
A spinning platter of magnetic data storage media which is highly flexible.

GB
Gigabyte.

Hard drive
A spinning platter of magnetic data storage media where the platter is very stiff.

Hexadecimal
A decimal notation for the value of a 4 bit binary number. (0-9, A, B, C, D, E, F) Example: 2F in hexadecimal = 00101111 in binary = 47 in decimal.

I/O
Input/Output. Data entering and leaving your LifeBook in electronic form.

I/O Port
The connector and associated control circuits for data entering and leaving your LifeBook in electronic form.

IDE
Intelligent Drive Electronics. A type of control interface for a hard drive which is inside the hard drive unit.

Infrared
Light just beyond the red portion of the visible light spectrum which is invisible to humans.

IR
An abbreviation for infrared.

IrDA
Infrared Data Association. An organization which produces standards for communication using infrared as the carrier.

IRQ
Interrupt Request. An acronym for the hardware signal to the CPU that an external event has occurred which needs to be processed.

KB
Kilobyte.

LAN
Local Area Network. An interconnection of computers and peripherals within a single limited geographic

location which can pass programs and data amongst themselves.

LCD
Liquid Crystal Display. A type of display which makes images by controlling the orientation of crystals in a crystalline liquid.

Lithium ion Battery
A type of rechargeable battery which has a high power-time life for its size and is not subject to the memory effect as Nickel Cadmium batteries.

LPT Port
Line Printer Port. A way of referring to parallel interface ports because historically line printers were the first and latter the most common device connected to parallel ports.

MB
Megabyte.

Megahertz
1,000,000 cycles per second.

Memory
A repository for data and applications which is readily accessible to your LifeBook CPU.

MHz
Megahertz.

MIDI
Musical Instrument Digital Interface. A standard communication protocol for exchange of information between computers and sound producers such as synthesizers.

Modem
A contraction for MOdulator-DEModulator. The equipment which connects a computer or other data terminal to a communication line.

Monaural
A system using one channel to process sound from all sources.

MPU-401
A standard for MIDI interfaces and connectors.

NTSC
National TV Standards Commission. The standard for TV broadcast and reception for the USA.

Operating System
A group of control programs that convert application commands, including driver programs, into the exact form required by a specific brand and model of micro-processor in order to produce the desired results from that particular equipment.

Parallel Port
A connection to another device through which data is transferred as a block of bits simultaneously with a wire for each bit in the block and with other wires only for control of the device not for transfer of data.

Partition
A block of space on a hard drive which is set aside and made to appear to the operating system as if it were a separate disk, and addressed by the operating system accordingly.

PCMCIA
PCMCIA is a trademark of the Personal Computer Memory Card International Association. The Personal Computer Memory Card International Association is an organization that sets standards for add-in cards for personal computers.

Peripheral Device
A piece of equipment which performs a specific function associated with but not integral to a computer. Examples: a printer, a modem, a CD-ROM.

Pitch (keyboard)
The distance between the centers of the letter keys of a keyboard.

Pixel
The smallest element of a display, a dot of color on your display screen. The more pixels per area the clearer your image will appear.

POST
Power On Self Test. A program which is part of the BIOS which checks the configuration and operating condition of your hardware whenever power is applied to your LifeBook. Status and error messages may be displayed before the operating system is loaded. If the self test detects failures that are so serious that operation can not continue, the operating system will not be loaded.

Program
An integrated set of coded commands to your computers telling your hardware what to do and how and when to do it.

PS/2
An IBM series of personal computers which established a number of standards for connecting external devices such as keyboards and monitors.

RAM
Random Access Memory. A hardware component of your LifeBook that holds binary information (both program and data) as long as it has the proper power applied to it.

RAM Module
A printed circuit card with memory and associated circuitry which allows the user to add additional memory to the computer without special tools.

Reset
The act of reloading the operating system. A reset erases all information stored in RAM.

Restart
See Reset.

Resume
To proceed after interruption. In your LifeBook this refers to returning to active operation after having been in one of the suspension states.

ROM
Read Only Memory. A form of memory in which information is stored by physically altering the material. Data stored in this way can not be changed by your LifeBook and does not require power to maintain it.

SDRAM
Synchronous Dynamic Random Access Memory.

Serial Port
A connection to another device through which data is transferred one bit at a time on a single wire with any other wires only for control of the device not for transfer of data.

Shadow RAM
A technique of copying data or applications stored in ROM (Read Only Memory) into RAM (Random Access Memory) for access during actual operation. RAM is much faster to access than ROM, however ROM contents are not lost when power is removed. Shadowing allows permanently stored information to be rapidly accessed.

SMART
Self-Monitoring, Analysis and Reporting Technology (SMART) is an emerging technology that provides near-term failure predictions for hard drives. When SMART is enabled the hard drive monitors pre-determined drive attributes that are susceptible to degradation over time. If a failure is likely to occur, SMART makes a status report available so that the LifeBook can prompt the user to back up the data on the drive. Naturally not all failures are predictable. SMART predictability is limited to those attributes which the drive can self-monitor. In those cases where SMART can give advance warning, a considerable amount of precious data can be saved.

SRAM
Static Random Access Memory. A specific technology of making RAM which does not require periodic data refreshing.

Status Indicator
A display which reports the condition of some portion of your hardware. On your LifeBook this is an LCD screen just above the keyboard.

Stereo (audio)
A system using two channels to process sound from two different sources.

Stroke (keyboard)
The amount of travel of a key when it is pressed from resting to fully depressed.

Suspend
To make inoperative for a period of time. Your LifeBook uses various suspension states to reduce power consumption and prolong the charge of your battery.

SVGA
Super VGA.

S-Video
Super Video. A component video system for driving a TV or computer monitor.

System Clock
An oscillator of fixed precise frequency which synchronizes the operation of the system and is counted to provide time of day and date.

TFT
Thin Film Transistor – A technology for flat display panels which uses a thin film matrix of transistors to control each pixel of the display screen individually.

UL
Underwriters Laboratories – An independent organization that tests and certifies the electrical safety of devices.

VGA
Video Graphics Array. A video display standard originally introduced by IBM with the PS/2 series of personal computers.

VRAM
Video Random Access Memory. A memory dedicated to video display data and control.

WfM
Wired for Management is Intel's broad-based initiative to reduce the total cost of ownership(TCO) of business computing without sacrificing power and flexibility.

Write Protect
Prevent alteration of the binary state of all bits in a storage media. Example: all information on a device such as a floppy diskette; a block of space in a storage media such as a partition of a hard drive; a file or directory of floppy diskette or hard drive.

Zip Drive
A read/write removable media disk drive.

Zoomed Video
A PC Card port which allows notebook PCs to deliver full screen broadcast quality video through third party PC Cards, including TV tuners, video capture, and MPEG full-motion video.

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